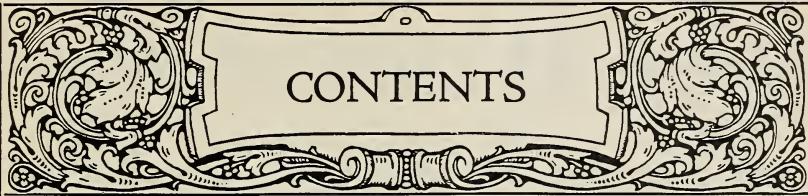


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THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root Editors	A. I. Root Editor Home Dept	H. H. Root Assistant Editor	H. G. Rowe M'n'g Editor
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Honey Wanted Honey

We are in the market for both comb and extracted. Send sample of extracted, state how put up, with lowest price, delivered Cincinnati. Comb honey, state grade and how packed, with lowest price, delivered Cincinnati. We are always in the market for white honey, if price is right.

C. H. W. Weber & Co.

2163-65-67 Central Av.,

Cincinnati, Ohio

SUPERIOR FOUNDATION

While the hum of the bees grows fainter, the hum of our machinery grows stronger, preparing for another enormous spring demand for Superior Weed Process Foundation.

When buying secure the best.

Manufactured by

SUPERIOR HONEY CO., OGDEN, UTAH

Indianapolis Can Give You Some Real Beekeeping Service

WE SHIP YOUR ORDER THE SAME DAY IT IS RECEIVED. LET US GIVE YOU SOME OF THIS SERVICE. CATALOG FOR THE ASKING. WRITE FOR PRICES ON BEESWAX.

THE A. I. ROOT COMPANY

873 Massachusetts Avenue, Indianapolis, Ind.

Have You Sold Your Honey?

We are buying COMB and EXTRACTED honey. Send us a sample and tell us what you have to offer. Name your most interesting price delivered to Cincinnati. Remittance goes forward the day shipment is received.

Old Comb—Don't forget we render wax from your old combs and cappings. Write us for shipping tags.

* * * * *

We Offer You Friction-Top Cans

2½-lb. cans.....	\$ 4.25 per 100	\$.50 per 10
5 -lb. cans.....	8.00 per 100	1.00 per 10
10 -lb. cans.....	12.00 per 100	1.40 per 10
1-lb. Round Screw Top Jars, 2 doz. in shipping case,		
10-case lots.....		\$1.60 per case.
Prices cash with order, f. o. b. Cincinnati.		

* * * * *

THE FRED W. MUTH CO.

Pearl and Walnut Streets.

Cincinnati, Ohio.

IT'S HERE! WE HAVE IT! QUALITY BEE SUPPLIES

Polished Shipping Cases

One-piece covers and bottoms, glass, paper, and nails included. Selling at cost prices, as follows:

- 24-lb. for 1⅓ sections,
\$30.00 per 100.
- 12-lb. for 1⅓ sections,
\$17.00 per 100.

Write for illustrated catalog on our bee supplies. We are always ready to serve you.

CHAS. MONDENG
146 Newton Ave. N. and
159 Cedar Lake Rd.
MINNEAPOLIS, MINNESOTA.

1922

PLACE YOUR ORDER NOW
FOR 1922 DELIVERY OF
**FOREHAND'S
THREE BANDS**
THE THRIFTY KIND

THEY ARE SURPASSED
BY NONE BUT SUPERIOR TO MANY.

**PACKAGE BEES
THREE-BANDED
QUEENS**

WRITE FOR PRICES NOW

W. J. FOREHAND & SONS
FORT DEPOSIT, ALA.

HONEY MARKETS

U. S. Government Market Reports.

INFORMATION FROM PRODUCING AREAS (FIRST HALF OF NOVEMBER.)

CALIFORNIA POINTS.—Demand has been better and movement heavier during past two weeks. Market firm, better feeling. Stocks continue to decrease. The heaviest movement is on light amber alfalfa; supplies of other grades, especially white stock, limited. Due to late rains colonies in southern California have more brood than usual at this date, and as a result winter stores are being consumed too rapidly. Carloads f. o. b. usual terms at loading points, white orange, no sales reported, supplies nearly exhausted; white sage mostly 11½c, light amber sage 8½c, light amber alfalfa 6½-7c, mostly 6½c. Considerable California honey being sold by producers in small lots at prices averaging 3-7c higher than carload prices. Hawaiian carloads f. o. b. San Francisco, white 6½c, light amber 5c, honeydew 4c. Beeswax: Market very quiet, too few sales to establish market.

INTERMOUNTAIN REGION.—Shipments continue heavy, and supplies in most sections are moving rapidly out of beekeepers' hands. Wire inquiry not so active but still good; offerings still liberal. Summer frosts following a warm spring weakened some colonies, but due to fine fall weather allowing late brood development, there are plenty of young bees. Stores are ample in most areas, and bees in good condition. Quality of the honey reported below normal in some localities. In parts of Idaho the alfalfa weevil has proved very destructive to beekeepers. In Arizona, altho the season was considered a failure, heavy shipments have been made of hold-over 1920 honey. Extracted: White sweet clover and alfalfa have ranged f. o. b. loading stations 7-9c, with some shippers holding for 10c per lb. Arizona light amber alfalfa and cotton 5½c, light amber mesquite 6-6½c. Comb: 24-section cases white alfalfa and sweet clover, mostly \$4.25-5.00, some high as \$5.75, and some darker grades lower.

PACIFIC NORTHWEST.—Spray poisoning has proved a real menace. Thousands of colonies were killed by feeding on alfalfa blooms in sprayed orchards, and many other colonies rendered partially unproductive. Bees not badly poisoned recuperated as a result of the late honey flow; colonies in favorable unpoisoned districts gave bumper crops. White honey selling 10-12c per lb.

TEXAS POINTS.—Late honey flow in some sections not sufficient to carry colonies thru the winter, necessitating feeding. In other areas the fall flow was heavy. White extracted honey has been moving at an average price of 8-9c per lb., and chuck comb can be bought for 12-12½c per lb.

EAST CENTRAL STATES.—The good fall flow from goldenrod and asters has filled up brood-nests nicely for the winter in Ohio, Indiana, and Kentucky. Northern Illinois and southern Wisconsin had just enough fall flow to stimulate brood-rearing unseasonably, and unless liberal feeding is resorted to, a heavy winter loss is looked for in this area. Many beekeepers are continuing their last year's practice of selling their honey in bottles, jars, and pails direct to retailers and consumers. In fact, some beekeepers are already buying of their neighbors to supply calls for direct shipment.

PLAINS AREA.—Shortage of fruit bloom, followed by hot dry weather in the summer have resulted in portions of Iowa experiencing a most disastrous season. Beekeepers who have not had to feed for 40 years were obliged to feed sugar syrup heavily to keep bees thru the winter. White extracted selling at 9-12c per lb. amber 7c.

NORTHEASTERN STATES.—Late crop of buckwheat and goldenrod was one of the heaviest on record, and helped make up for lighter yield of white honey. Late swarming has been excessive, but August-September swarms have secured sufficient stores so no feeding will be necessary. Bees are in unusually good condition. Extracted white clover selling at 8½-11c per lb., and buckwheat at 5½-7½c. Comb honey ranges \$4.50-5.00, some \$5.50 for white, and \$3.50-4.50 for dark.

SOUTHEASTERN STATES.—Fall flow a failure in some sections; in others, honey still coming in as late as Nov. 1. Brood-rearing greatly encouraged by favorable weather. Demand poor, ascribed to business depression. White honey selling 10-

12½c per lb., light amber 7½-8c, dark amber low as 6c.

TELEGRAPHIC REPORTS FROM IMPORTANT MARKETS.

BOSTON.—250 cases by boat California and 100 cases New York arrived since last report. Demand good for extracted, moderate for comb, market firm. Comb: Sales to retailers, New Yorks, 24-section cases No. 1 white clover \$6.00-7.00, few \$7.50. Vermont, 20-section cases No. 1 white clover \$6.50 to \$7.00, light low as \$5.00; 24-section case fancy car-top stock mostly \$9.00. Extracted: Sales to confectioners and bottlers, Porto Rico, amber 80-85c per gal. Cuban, amber 75-80c per gal. California white sage 15-16c, mostly 16c per lb. Brokers nominal l. c. l. quotations delivered Boston basis, California white sage 12-13c, light amber sage 10c per lb.

CHICAGO.—1 car Nevada, 1 car Wyoming, 2,000 lbs. Michigan, 3,000 lbs. Wisconsin arrived since last report. Demand has been improving steadily for past month or so but prices have undergone but slight improvement. Present tone steady with operators a trifle more optimistic. Quite a lot of old crop stock around, most of which is ordinary quality and moving at liberal discount. Extracted: Sales to bottlers and candy manufacturers, per lb. Wisconsin and Michigan, basswood and clover white 11½-13c, light amber 9-10½c. Wyoming, Nevada, and Colorado, mixed alfalfa and clover white 11-11½c, light amber mostly 10c. Comb: Sales to retailers, Ohio, Wisconsin, and Minnesota, mixed clover and alfalfa 24-section cases No. 1, \$6.00-6.25; good quality but light weight \$5.00; dark, broken sections \$4.00-4.50 per case. Beeswax: Receipts moderate. Demand slow to moderate. Market about steady. Great deal of foreign wax around, mostly of inferior grade, particularly from Philippine Islands and Africa. Sales to ship supply houses, wholesale drug houses, harness makers, and laundry supply houses, per lb. Texas, Missouri, and Oklahoma, light 29-32c, dark 26-28c. South and Central American, medium light 21-24c.

MINNEAPOLIS.—Comb: Supplies liberal. Demand and movement light, market steady. Sales direct to retailers, Colorados and Utahs, 24-section cases mixed alfalfa and sweet clover No. 1, \$6.25-6.50, few \$7.00. Extracted: Supplies liberal. Demand and movement slow, some dealers feeling much weaker, others holding firm. Sales direct to retailers, confectioners and bakers, Colorado and Utah, white alfalfa and sweet clover mixed 12-17c per lb. Minnesota and Wisconsin, white clover 13-16c per lb.

NEW YORK.—Domestic receipts limited, foreign receipts limited. Supplies limited. Demand limited, market dull and unsettled. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers, and bottlers, domestic per lb. California, white sweet clover 9½c, light amber alfalfa 8½-9c, light amber sage 9½c, white sage 11-12c, white orange blossom 12-13c, few high as 14c. New York, white clover 9½-10c, buckwheat 7½-8½c. South American and West Indian, refined 65-75c per gal., or 6-7c per lb. Comb: Few sales, New York, 24-section cases white clover No. 1, \$6.50-7.00. Beeswax: Foreign receipts moderate. Supplies moderate. Demand limited, movement light, market dull. Spot sales to wholesalers, manufacturers, and drug trade—South American and West Indian crude light best 22-24c, slightly darker 20-21c, dark 14-15c. African, dark mostly 14c.

PHILADELPHIA.—Receipts light. 74 cases N. Y. and 21 bbls. Porto Rico reported arrived, but dealers generally have a moderate supply on hand. Demand for extracted only moderate and the market steady. Extracted: Sales to jobbers, bakers, and wholesale grocers, Porto Rico, light amber various flavors 76c per gal. New Yorks, white clover 8½-9c. Beeswax: Altho receipts are very light the demand is slow and market slightly weaker. Sales to manufacturers per lb. crude, medium light, Chilean 22c, Brazilian 21c, African, dark 14-15c. New crop Chilean expected to be ready to move the latter part of December.

H. C. TAYLOR,
Chief of Bureau of Markets.

Special Foreign Quotations.

LIVERPOOL.—Since our last report there has been little doing in Chilian honey. Stocks are getting gradually reduced, and only about 150 barrels are now in first hands. The value in American (Continued on page 781.)

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in November we sent to actual honey producers and to some associations the following questions:

- What is the condition of the colonies in your locality compared with normal as to (a) Number and age of bees? b) Stores for winter? Give answer in per cent.
- What is the number of colonies in your locality compared with spring count? Give answer in per cent.
- What is the condition of the honey plants for next season at this time as compared with normal? Give answer in per cent.
- What per cent of the 1921 crop of honey is still in the hands of producers in your locality?

- What prices are producers receiving at their station when sold to large buyers? (a) Comb honey per case? (b) Extracted honey per pound?
- What is the price when sold to retailers in case lots? (a) Comb honey fancy or No. 1 per case? (b) Extracted honey in five-pound packages?
- How is honey now moving on the market in your locality? Give answer in one word as slow, fair, rapid.
- What per cent of the honey is being sold locally this season in your locality?

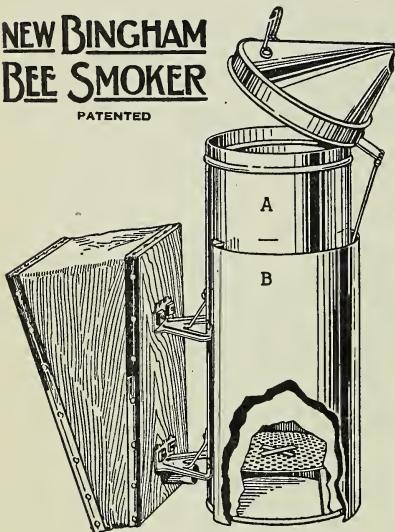
The answers as returned by our corps of honey and bee reporters are as follows:

State.	Reported by	Condition No. Col.				Crop		In large lots.		To retailers.		Movement.	Sold Locally		
		Bees.	Stores.	Ones.	Plants.	Unsold.	Comb.	Extr.	Comb.	Extr.	Comb.	Extr.			
Ala.	J. C. Dickman	90	90	100	80	.25			\$.07				Fair	95	
Ala.	J. M. Cutts	100	125	120	80	.50	\$4.80	.10	\$6.00	.60	Slow		90		
Ariz.	K. R. Evans	110	105	100	100	.10			.07				Fair	5	
Ark.	J. Johnson	100	100	100	100	.50					6.00	1.00	Fair	50	
Ark.	J. V. Ormond	100	150	100	100	0									
B.C.	W. J. Sheppard	100	100	130	100	.25	7.20	.28	10.80	.175	Fair		99		
Cal.	M. C. Richter	90	100	100		.20		.06			1.15	Rapid	30		
Cal.	M. A. Saylor	100	100	100	100	.50	3.00	.07	3.60	.75	Fair		75		
Col.	J. A. Green	100	95	120	100	.25	4.70	.08	4.80	.65	Fair		10		
Col.	B. W. Hopper	90	90	95	100	0	5.00	.10	6.00	.80	Rapid		10		
Conn.	A. Latham	125	100	110	100	.80	4.50	.17	6.00	.150	Fair		90		
Conn.	A. W. Yates	100	100	125	70	.50	6.00	.15	8.00	1.00	Fair		100		
Fla.	C. C. Cook	100	100	147	100	.80			.15				Fair	90	
Fla.	H. Hewitt	100	100	100	100	.20			.08				85	Fair	90
Fla.	W. Lamkin	100	100	105	100	.25			.10				.75	Fair	50
Ga.	J. J. Wilder	100		120	100	.50	5.50	.10	6.50	.85	Fair		70		
Ill.	C. F. Bender	100	100	110	100	0	6.00				6.50		Good	80	
Ill.	A. L. Kildow	100	100	95	110	.75	5.25	.12	6.00	.100	Fair		40		
Ind.	J. Smith	100	75	125	150								Fair	100	
Ind.	T. C. Johnson	100	100		125	.5					6.00	1.00	Fair	100	
Ind.	E. S. Miller	100	100	100	100	.50					6.00	1.00	Slow	100	
Iowa.	F. Coverdale	100	75	90	80								Fair		
Iowa.	W. S. Pangburn	100		100	100	.75			.14				90	Fair	25
Iowa.	E. G. Brown	100	80	110	90	.25			.10				.95	Rapid	25
Kan.	C. D. Mize	100	75	110	100	.40					6.00	.75	Fair	100	
Kan.	J. A. Nininger	90	70	90	90	.20	5.50	.12	6.00	.75	Fair		100		
La.	E. C. Davis	100	100	200	100	.50	6.75	.08	6.00	1.00	Fair		50		
Me.	O. B. Griffin	90	95	120	90	.50			.08					Fair	50
Md.	S. J. Crocker, Jr.	100	100	125	90	.10			.13					Fair	100
Mass.	O. M. Smith	100	100	100	100	.10							Slow	100	
Mich.	I. D. Bartlett	125	125	125	100	.25			.11				.75	Fair	100
Mich.	F. Markham	100	125	110	125	.25					6.00	.85	Fair	100	
Mich.	L. S. Griggs	100	100	125	110	.35					6.00	.90			
Minn.	C. Blaker	100	100	100	100	.50	5.50	.11					1.25	Slow	60
Miss.	R. B. Willson	100	100	110	75		4.50	.09	5.00	.92	Fair		60		
Mo.	J. H. Fisbeck	100	100	100	100								1.25	Fair	100
Mo.	J. W. Romberger		110	60	0		6.50	.12	7.00	.92	Slow		100		
Mont.	R. A. Bray	100	110	110	100	.40	5.50	.12	6.00	.80	Fair		30		
Nev.	T. V. Damon	100	100	100	100	0	4.50				5.50	.75		0	
N.J.	E. G. Carr	100	100	125	60						6.00		Fair	50	
N.Y.	Adams & Myer	85	50	100	25	.35	5.00	.10	6.50	1.00	Fair		75		
N.Y.	G. B. Howe	105	110	95	75	.10			.13				.85	Rapid	90
N.Y.	F. W. Lesser	90	100	120	90	.10	4.50	.10	5.50	.88	Fair		5		
N.Y.	O. J. Spohn	100	100	100	100	.20							Slow	100	
N.Y.	G. H. Rea	100	100	100	50	.25	4.50	.09	6.50	1.10	Fair				
N.C.	C. S. Bumgarner	100	80	110	100								Slow	100	
Ohio.	E. G. Baldwin	125	125	200	80	.50	6.00	.10	7.00	1.00	Fair		50		
Ohio.	F. Leininger	100	100	100	0				.10	5.00	.75		25		
Ohio.	F. Moore	100	90	100	90	.25				.12	4.80	.80	Fair	10	
Oklahoma.	R. D. Hiatt	100	80	120	95	.20					6.00	1.20	Fair	100	
Oklahoma.	J. Heneisen	60	80	90	75	0									
Oklahoma.	C. F. Stiles	85	60	100	90	0									
Ore.	E. J. Ladd	100	90	60	100	.20							Slow	100	
Ore.	H. A. Scullen	100	100	125	90	.25	5.75	.12	7.50	.50	Fair		100		
Pa.	H. Beaver	100	100	110	85	.50	4.25	.09	6.75	1.00	Fair		20		
Pa.	C. N. Greene	100	90	100	90	.25	6.00	.10	6.25	.75	Fair		90		
R.I.	A. C. Miller	105	100		100								1.25		
S.C.	A. S. Conradi		95	100	100	.25							Rapid	100	
S.D.	L. A. Syverud	100	100	115	90	.30								50	
Tenn.	J. M. Buchanan	100	100	100	90										
Tex.	T. A. Bowden	75	80	100	70	.25							80	Slow	100
Tex.	J. N. Mayes	70	80		65	.5	8.00	.10	8.40	.55	Rapid		25		
Tex.	H. B. Parks	98	100	115	95	.20			.08				.85	Fair	33
Utah.	M. A. Gill	90	100	110	80	.5	4.50	.08	5.00	.50	Fair		75		
Wash.	G. W. B. Saxton	100	100	95	100	.95			.12				95	Slow	75
Wash.	G. W. York	80	60	100	95	.50	5.00	.09	6.00	.90	Slow				
Wash.	W. L. Cox	100	95	85	95	0	6.00	.12	7.00	.90	Rapid		95		
W. Va.	W. C. Griffith	100	100	105	100	.10	7.50	.15	7.50	1.00	Fair		100		
Wis.	N. E. France	100		100	110	0							1.25	Fair	
Wis.	E. Hassinger, Jr.	100	100	110	50	.10							.85	Rapid	85
Wis.	H. F. Wilson	100	100	100	100	.10			.15				1.25	Rapid	100
Wyo.	A. D. Brown	100	90	105	90	.65	5.00	.11	6.00	1.00	Fair		90		

Bingham's Big Smoke Smoker

**NEW BINGHAM
BEE SMOKER**

PATENTED



**Wins Contest at New York State
Beekeepers' July Meeting.**

Gilbertsville, N. Y., Oct. 3rd, 1921.

A. G. Woodman Co.:

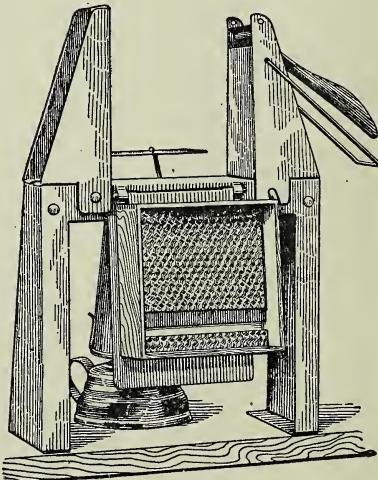
Last winter I bought a copper Big Smoke Smoker with shield of you and in July took the same to the Chenango County beekeepers' picnic and entered the Smoker contest. There were nine contestants and the Big Smoke won the prize, which was a fine queen bee. Needless to say, I was very proud of the victory. They gave us one minute, and at the expiration of thirty-five minutes the Big Smoke was the only one burning. They called it "Steam Boiler." However, it won and thought I would inform you.

C. F. Bushnell.

The contestants were allowed to use any fuel they desired and as much or as little of it as thought advisable. The contestants were given one minute in which to light their smokers, then let set for thirty minutes. At the end of this period, the one that smoked best in thirty seconds won the prize.

Buy Woodman Section Fixer

One of our men, with the Section Fixer, puts up 500 sections with top starters, in one hour and thirty minutes, 500 sections set up with top starters in ninety minutes. This includes the labor of cutting foundation, getting sections and supers and placing the sections into the supers and carrying them away. A complete job. This is nothing unusual, but his regular speed. You can do the same if you have the push after you become accustomed to the work. There is no breakage of sections. It will pay you to secure one of these machines for this work. It is the best thing of the kind on the market.



Special Sale on Honey Packages

Friction-top Pails in the 5-pound at \$7.00 per crate of 100; \$13.00 for crates of 203; the 10-pound size at \$11.30 for crates of 113. Special prices on 60-pound cans, one-gallon square cans, and other sizes.

A. G. WOODMAN CO., Grand Rapids, Michigan

QUEENS Package Bees and Nuclei QUEENS

Have a special offer to Beekeepers' Associations or groups of beekeepers that can use a car of bees at a time, 800 to 1000 packages. We are prepared to load 2 cars a week after April 5th, 1922. Free ticket to the party coming down to go back with the car or I can furnish a man. This is the best way; no transferring from one car to another; bees go through in 3 to 4 days. Also special attention given to small orders.

1922 PRICES. BOOKING ORDERS NOW. SAFE ARRIVAL GUARANTEED.

1-pound package.....	\$2.25 each; 25 or more.....	\$2.15 each
2-pound package.....	3.75 each; 25 or more.....	3.60 each
3-pound package.....	5.25 each; 25 or more.....	5.00 each
2-comb nuclei.....	3.75 each; 3-comb nuclei.....	5.25 each

(Add price of queen wanted.)

1 Untested Queen.....	\$1.50 each; 25 or more.....	\$1.30 each
1 Select Untested.....	1.70 each; 25 or more.....	1.50 each
1 Tested	2.25 each; 25 or more.....	2.00 each
1 Select Tested	2.65 each; 25 or more.....	2.25 each

One-fifth down with order, balance just before shipping; or 4% discount for full remittance for December, and 3% for January orders.

THE NUECES COUNTY APIARIES, CALALLEN, TEXAS E. B. AULT, PROP.



The Old Reliable Three-Banded Italians



Booking Orders Now for 1922. Queens Ready April 1.

Read the Following Letter:

Next season I will want more of your Italian Queens as I am very well pleased with the ones that I have gotten from you.

One of the reasons I want your queens is because I saw just how you rear your queens when I visited your apiaries in the spring of 1920. As I have been a queen-breeder I feel that I know how the best queens should be reared. I feel that I can truthfully say that you have the best and most complete outfit for queen-rearing that I have ever seen. Your plan of selecting only the large well-built cells to give to your mating nuclei also took my fancy. I saw colonies that were headed by your breeders with about two hundred pounds of honey in the supers. I was so favorably impressed that I gave you that year's order for queens.

Your queens have made good here, produced some very strong colonies that got the honey. I have used several of them for breeders and so has one of my friends, whom I let have a few of your queens. He thinks they are the best queens that he ever bought. I take every opportunity to recommend your queens to my beekeeper friends.—C. S. Engle, Sioux City, Iowa.

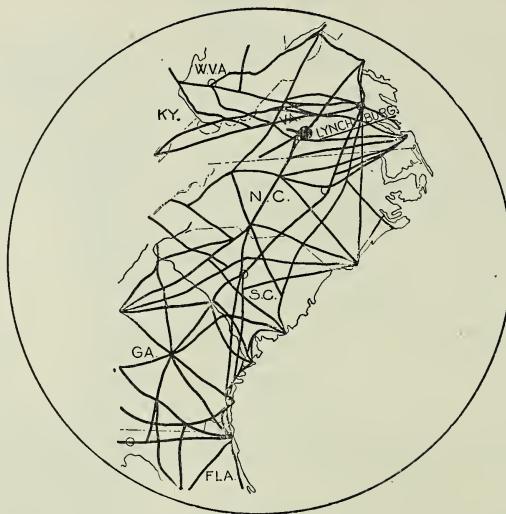
Nearly every beekeeper who has visited our apiaries has become a customer. There must be a reason.

Prices April, May, and June.

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GLEANINGS IN BEE CULTURE

DECEMBER, 1921



EDITORIAL

NOW that the quadruple winter case has been adopted as standard equipment by many northern bee-

Drifting When Large Winter Case Is Used. keepers, it is well to take some precautions to prevent drifting when these

large winter cases are used. The hives should not be moved very far from their summer position when they are put into the winter case, so the bees will not be so badly confused on their first flight after being packed. Many beekeepers use the bottom of the winter packing case for the hive-stand during the summer, the hives being spread apart as far as they will go on the bottom of the winter case in summer, and crowded together for winter. If there is any trouble from bees entering the wrong hive, it can be overcome to a great extent by driving a stake into the ground just between the two entrances, or by any arrangement that will help the bees to distinguish their own entrance. The type of entrances used in the winter case apparently makes considerable difference in the tendency to drift.



BEEKEEPERS who are located where there is much American foul brood can save themselves a lot of trouble

Don't Winter American Foul Brood. next spring by a little attention now to see that no colonies having this disease

are permitted to go into winter quarters in their neighborhood. Any colonies that have been greatly weakened by American foul brood should be destroyed, for it would not pay to treat weak colonies having mostly old bees. No doubt thousands of such colonies will be permitted to go into the winter again this year thru carelessness and ignorance, only to die in midwinter. Then as soon as the bees can fly they will rob out the honey that is left and the disease is scattered to other colonies. Next spring the inspector may find these hives and burn up the infected combs; but it is then too late, for

the mischief is usually done before the inspector can begin his regular work of examining colonies for disease in the spring. Colonies which are found to be only slightly diseased can be treated now, wherever brood-rearing has entirely ceased, by shaking them on combs of sealed honey and destroying the combs from which they were shaken.



OF THE more than 4,000 projects being investigated by the various agricultural experiment stations



Beekeeping Projects at Experiment Stations. in this country, 356 relate to studies

on various insects,

and 35 of these relate to bees and beekeeping. It will be of interest to beekeepers to know that more projects relating to honeybees are listed than are listed relating to any other insect, apple insects (all species) being covered by 20 projects, of which the codling moth calls for 13. This is a most creditable showing for beekeeping and is quite in contrast with conditions of a few years ago. The beekeeping projects are conducted at 13 experiment stations, and there are five others where some work is reported from other sources.



A BEEKEEPER in northern Indiana has sold large quantities of honey this fall at public sales held



Selling Honey at Public Sale. in his vicinity.

While he has not

explained his method of selling, apparently some of the honey is sold at auction to the highest bidder, probably just enough to create an interest and call attention to the supply he has brought with him, which is then sold at the regular price to all who wish to buy. No doubt, an arrangement of this kind can be made at almost any public sale, thus offering an opportunity to dispose of tons of honey to people who probably would never think of using honey if it had not been

brought to their attention in this way. This beekeeper is building up a trade in honey that should be of great value to him in the future. He did not cease his effort when his own crop was sold, but he has sold the crop of some of his neighbors, thus contributing to the general good of the beekeeping industry.

THE Bureau of Markets and Crop Estimates, U. S. Department of Agriculture, is constantly improv-

 Government Market Reports on Honey. ing its service to beekeepers in in-

formation on the honey markets. In its semi-monthly reports, which are sent free to beekeepers and others, are given not only shipping point information and telegraphic reports from important markets, as published on the market page in this journal, but additional information on imports and exports of honey and beeswax are also given out from time to time. These semi-monthly reports can be had for the asking by writing to the Bureau of Markets and Crop Estimates, U. S. Department of Agriculture, Washington, D. C., asking for the semi-monthly report on honey.

OUR market reporters, who have so faithfully reported the crop and market condi-

 What They Have Done For Us. tions for their re-

specitive localities each month for our market page, certainly deserve a vote of thanks from our readers for the service they have rendered beekeepers during this season when this kind of service was so badly needed. No one can tell what would have happened to the honey market, if the information on crop and market conditions gathered and published by the bee journals and the U. S. Bureau of Markets and Crop Estimates had been withheld. In some regions a bumper crop was harvested this year following a similar bumper crop harvested last year, much of which was still in the hands of the producers. This condition would have caused panicky selling in these localities, if the true conditions existing thruout the country had not been known early in the season.

One correspondent complains that the publication of the crop and market conditions for his locality, where the crop was light this season, caused his market to be flooded with honey shipped in from other places at prices below that which he could have obtained if the foreign honey had not appeared in his market. This man failed to consider how much cheaper this same honey from outside sources would have been dumped upon his market, if the honey market had not been steadied last summer by

the publication of the true condition of the crop and the markets in all important centers.

GEO. H. REA, who during the past few years has been doing beekeeping extension work in the State

 Extension Work in Beekeeping in New York. under a co-operative arrangement be-

between the Bureau of Entomology, U. S. Department of Agriculture and the New York State College of Agriculture, is leaving to take up similar work in Pennsylvania. Few people fully realize the far-reaching effects of vigorous extension work, such as has been carried on in New York during the past several years, and the betterment of beekeeping that must result from this kind of work. Within the past year Mr. Rea held 55 demonstrations with an attendance of nearly 1000 beekeepers, gave 65 lectures with an attendance of about 2500, and attended 36 conventions with an attendance of 1603. This makes a total of 156 meetings, with a total attendance of 5170 beekeepers. He also visited 66 apiaries to give personal assistance. In addition to this, the correspondence on bee-keeping was over 1000 letters.

Since Mr. Rea went to New York the number of associations (county and regional) has been increased to 37, with a membership of 1500. During the season of 1921 the associations co-operated in the purchase of supplies amounting to about \$20,000, which means a considerable saving in purchase price and a reduction in shipping expenses. Many of the new organizations have affiliated with the State Association.

THE energy with which beekeepers have taken up the problem of creating new outlets in disposing of

 The Silver Lining Grows Brighter. their crop of honey this season is having its effect, and in some places the stocks of honey are being cleaned up nicely in spite of the general depressed condition of business.

As pointed out editorially last month, the most important feature of the intense selling campaign put on by beekeepers thruout the country this season is, after all, a much greater thing than the disposal of this season's crop and that which was held over from last year, important as this is. The rewards for this extra effort will come in the future, and in his effort toward creating new outlets for honey the beekeeper should think in terms of building for the future. Every pound of honey that is sold to some one who has not been a user of honey should call for more than a pound next year as well as for many years to come when, no doubt,

production and distribution costs, as well as the price of honey, will become adjusted to leave more profit to the producer.

A year ago it began to look as tho the good effects of the introduction of honey during the war into thousands of homes where it had not been used before would be lost, but apparently many who learned to use honey when sugar was so difficult to obtain, are willing to use it regularly when it can be obtained at a reasonable price. If the present intensive selling effort is continued a few more years, there is no telling how much honey will be consumed by the American people.

Those who have made a lot of new customers for honey but have sold out their crops should by all means secure enough honey elsewhere to supply this newly created demand, or at least see that it is supplied by someone, for every possible channel for the movement of honey should be kept open for a possible good crop next year and other years to come. A constant and vigorous effort on the part of all the agencies now at work in the distribution of honey is the only way the gains now being made will become permanent.

More evidence is coming to the editor's desk every day indicating a growing popularity of the 5-pound pail as a standard package for honey. Let us hope that the time is not far distant when this package will be as well known to the American housewife as standard packages of other food products now so familiar to the American people and so commonly found on the grocer's shelves.



WITH the lower prices for honey now prevailing and which may prevail for some time to come, bee-

 Some Plans keepers must figure for Gleanings closely to make their in 1922. business show a prof- it. No doubt some

of the honey now being marketed is being sold for even less than it has cost to produce it when all the factors that enter into its cost are figured, especially in those localities where the crop was light.

Obviously, unless the price of honey can be increased, the only way left open for the beekeeper to increase his profit is by reducing his operating expenses or increasing his yield, or better still by doing both. In many cases, probably in most cases, there is abundant room for increasing the now too narrow margin of profit in both these directions, but especially in the matter of increasing the yield.

To meet the situation as it exists today Gleanings has plans under way for publishing, during 1922, specific seasonable articles from the best authorities in the country, giving their latest short cuts in production and their best methods for increasing the yield.

During the spring we expect to publish the very latest and best ideas from some of the most successful beekeepers in the country on spring management, telling how to have the largest possible force of bees in each hive at the very beginning of the honey flow instead of in the middle or at the close of the honey flow, as too often happen in many of the colonies. Much has been learned about this important problem with in recent years, and Gleanings proposes to publish the best matter obtainable on this subject just when the need for this information is greatest in the spring.

In the May issue, the problem of swarm control will be discussed by beekeepers who have been most successful in dealing with this difficult problem, telling how to hold down swarming with the least possible labor, and at the same time to keep the spirit for work among the bees at the highest pitch thruout the entire period of the honey flow.

In July and August we expect to publish the latest short cuts in harvesting the crop of honey and packing it for market, both for comb honey and extracted honey. The September issue will be devoted largely to the problem of marketing; the October issue to outdoor wintering, and the November issue to cellar wintering, giving in each case the very latest information on each of these subjects from experts in their particular line. These are a few of the outstanding features now under way for Gleanings for 1922.

In addition to these special features for the more extensive honey-producers, the needs of the amateurs and beginners will be conscientiously taken care of in the departments, Talks to Beginners and Gleaned by Asking, but in every case the matter will be selected and arranged with the thought constantly in mind of making the special feature articles of benefit to the beginner as well as the extensive honey-producer, and the Talks to Beginners and Gleaned by Asking departments useful not only to beginners but also to professional beekeepers. The other departments in Gleanings are to be continued and strengthened. The North, East, West, and South department is being modified, so that it will be more useful to beekeepers everywhere. Our market report service will be strengthened and made of more value to beekeepers than ever before. Grace Allen and Constance Root Boyden will continue their delight contributions for the many who enjoy them.

J. E. Crane, with his rich and ripe experience in beekeeping, will continue his valuable monthly comments on the preceding issue.

A. I. Root, still young despite his 81 years and as much interested in all affairs of life as ever, will of course continue his unique "Our Homes."

I GOT my start in bees in 1920 by finding 54 bee-trees. I had good luck in saving them, for I always worked into the frames the combs of brood and all

the straight comb. I found the bees in all kinds of trees as well as in logs lying on the ground. From one log I got over \$20.00

AN APIARY 7900 FEET UP

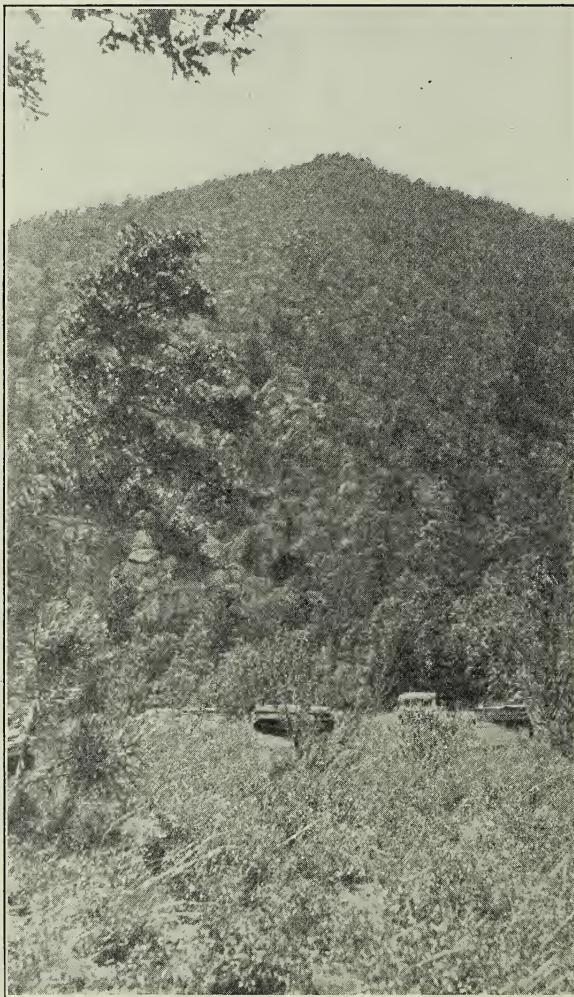
*Secured From 100 Bee Trees.
Rocky Mountain Bee Plant Heavy
Yielder in Its Natural Home*

By S. M. Campbell

worth of honey besides the full set of 10 combs. I got plenty of honey to pay my grocery bill all the summer of 1920 from the wild bees.

This spring,

1921, I commenced early hunting for more bee-trees and have found up to date 46. The best tree had five 5-gallon cans full of comb



[The beeyard that has an elevation of 7900 feet on Eldern Mountain. There are 46 colonies here, all taken from bee-trees. The best colony made over 200 pounds of comb honey from the Rocky Mountain bee plant. In winter this high-up apiary is sometimes buried under six feet of snow. This is the location on which Mr. Campbell began bunching his wild bees.]

honey. I don't think anyone has worked harder than I have to get into the bee business. I worked a strip last summer 13 miles long and six miles wide in the rough mountains. Some of them are so high that they have snow on top all summer. I didn't have

a team or a car, so I had to carry the bees on my back from the mountain to my Mount Eldern Apiary. But I have something to be proud of now, for I have something that makes me a living.

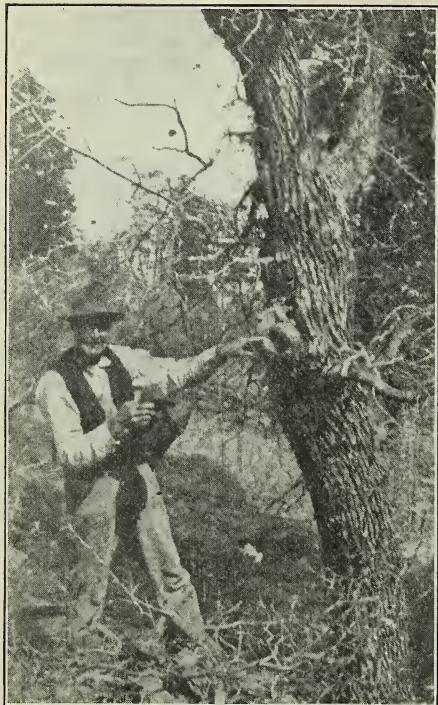
The bees are mostly hybrids, but there



[The Campbell apiary on its winter location at the foot and on the south side of the lofty Eldern Mountain. Winter cases will be put on these hives. These are made an inch larger than the hive on the inside and deep enough so that the super can be left on and a top covering of 6 inches of chaff given.]



[Mr. Campbell took swarms of bees from this one tree from openings 60 feet above the ground. He secured 80 pounds of honey and 16 frames of comb filled with brood and honey. The 100 bee-trees felled by Mr. Campbell were all cut with the ax shown in the picture.]



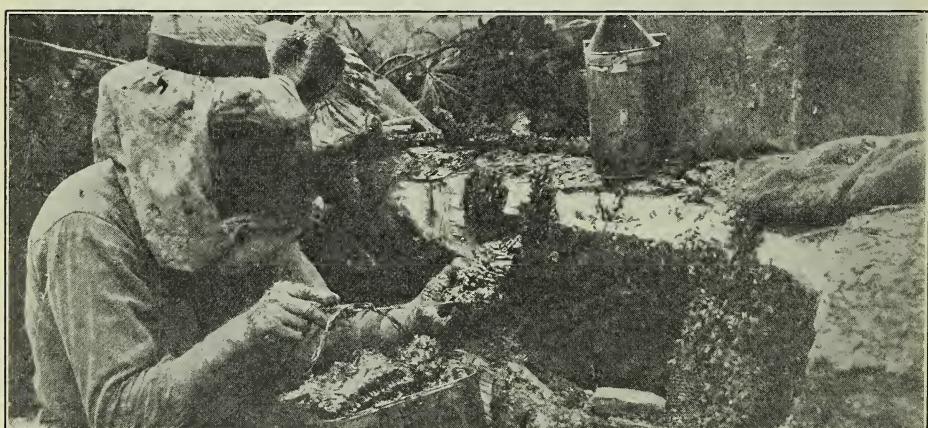
[This bee-tree was one of seven standing very close together at an altitude of over 7000 feet. The opening in this tree was only shoulder high to Mr. Campbell, who is shown smoker in hand ready to do business. Seven bee-trees bunched close together show what excellent bee pasture the Rocky Mountain bee plant furnishes in its native place.]

are quite a few pure blacks, the blacks having made the most honey. The colony that made over 200 pounds of honey is black bees. I got them out of a gabled end of a house in Flagstaff. They had been there eight years.

I have never seen any honey that beats this, gathered from the Rocky Mountain bee plant. The picture of this honey plant which I am sending you was taken close to the beeyard. The plant grows about three feet high. It makes good hay when cut at the right time, and the chickens like the seed as well as they do buckwheat. My



[A patch of Rocky Mountain bee plant, growing wild about Mr. Campbell's apiaries. "A wonderful honey," says Mr. Campbell, "in the blooming of which the nectar fairly shines."]



[Mr. Campbell called this a rich bee-tree. The picture shows little more of the big pine log than just the opening into it made with Mr. C.'s ax. He is here shown securing a big lot of honey which more than filled two five-gallon cans, the top of one of which is shown directly in front of the busy honey harvester. The bees' entrance in this tree was 50 feet above the ground.]

little Ford is standing in the corner loaded with supers.

Flagstaff, Ariz.

[The Rocky Mountain bee plant (*Cleome Serrulata*) was tried out by beekeepers thruout the country years ago in an effort to cultivate it as a honey plant. In 1891 the Michigan Experiment Station planted several acres of it for the sole purpose of testing its honey-producing qualities, but the results were disappointing so far as nec-

tar was concerned. This, of course, is only one of many illustrations of a nectar-bearing plant being of minor importance outside of its natural environment but a dependable source of large crops of honey when growing in its natural home. Apparently this plant is a heavy yielder of nectar at greater altitudes. The finding of so many bee-trees more than 7,000 feet above the sea, is an indication of the importance of this plant as a yielder of nectar in its native home.—Editor.]



A COUPLE of months ago, after I had visited central Alabama and had noted the wonderful opportunities for bee-raising and queen-rearing in

that part of the country, a statement came out in one of the Montgomery papers that this particular country was so good that 10,000 beekeepers would come into Montgomery County alone.

As it transpired, this was the innocent prophecy of an enthusiastic booster from Montgomery and vicinity, and not the statement authorized by any beekeeper, much less by myself. The real honest facts of the case are these: The territory in question is

PACKAGE BEES FOR THE NORTH

Building Up a Great Industry in the South. A Good Use for Bitterweed Honey

By E. R. Root

the year—just such a flow as is ideal for the production of bees and queens. It is my belief, from what I have seen from two trips in that country, that the

territory within 200 miles of Montgomery, Ala., while mediocre for the production of honey, is the best for raising bees and queens for the North of any equal area in the United States unless it be the alluvial lands in central and southern Louisiana. Of this I shall speak more at length at another time.

As a matter of fact, if the figures I have gathered are correct, and I think they are, there are actually more bees raised and queens reared in central Alabama and eastern Mississippi than in any other equal area in the world. Quite a number of the queen-breeders in the territory reared and delivered over 8,000 queens this last season. Two or three reached the 10,000 mark; and one in particular actually raised and sold over 15,000 queens; and he said that, if he had had the orders, he could easily have made it 20,000.

Buying Package Bees in Spring Instead of Wintering in North.

The honey comes in just fast enough to keep up breeding, and by the first of April the hives will be boiling over with bees. The surplus of these bees is shipped north in packages holding from two to three pounds each. Scores and scores of instances will show where these three pounds of bees, when shipped and put on combs in the North, have made a production of honey equal to any of those wintered over in the cellar or outdoors. Large numbers of extensive honey-producers in the North are already beginning to raise the question why they can not buy their bees in package form from this Southland cheaper than they can winter over in cellars or packing-cases, using honey that they might otherwise sell, and the proceeds from which they could use for buying bees from the South with



Bitterweed.

not a great honey country. The average yield per colony is not large as compared with those of the North; but there is an almost continuous light flow from month to month, possibly eight or nine months of

absolutely no possibility of winter loss. There are, I believe, not a few who would winter only a part of their bees if they could be sure of getting delivery from the South of all the bees they need by the 15th of April or May 1.

The beekeepers of the Southland, seeing their opportunity to supply their northern collaborators with bees and queens, are rapidly increasing their facilities for raising them. They are by no means anxious to have other people come in and flood a territory well nigh overstocked with bees; moreover, any northern man who would go down into this country would have to spend a year or two before he could become fully acquainted with the territory. There is just as good bee-raising territory elsewhere in the Black Belt as in the section near Montgomery, now overcrowded. There is, likewise, good territory in Louisiana where there are few bees and beekeepers. Of this I shall write later.

Bitterweed a Blessing in Disguise.

There is one honey plant much despised in some quarters, but which is a very important factor in the production of bees and queens in the South. It is known as the bitterweed, and, as might be expected, the honey is very bitter, and, of course, entirely unfitted for table use—so poor that even

the manufacturers do not want it. The natural consequence is that this honey, entirely suited for breeding bees, stays in the hives. It is this poor honey that makes such strong colonies in the spring.

Besides the bitterweed there are other honey plants such as boneset, goldenrod, and willow that yield inferior honeys that help to keep up a rotation of a continuous flow for almost the entire year.

But the beekeepers of this Southland, besides their dark and inferior honeys, secure a very fair surplus of a splendid honey known as melilotus, or sweet clover, some of it being the annual, or Hubam. This lasts several weeks, and, best of all, it comes on at a time after the main shipping of the bees in package form. While the yield is fair, the average per colony is only about a half of the average production in the North. The quality is equal to that of any sweet-clover honey in the North.

In a future issue I hope to tell you about another land that is the equal if not the superior of the famous Black Belt of Alabama and Mississippi. There are comparatively few bees and beekeepers there yet; and when they do get into this land of promise it may rival any other territory in the United States for raising bees and queens.



DURING the past 15 years the inventive genius of American beekeepers has been busy with improvements in methods and apparatus for producing extracted honey, leaving those of us who have continued to produce comb honey to get along with the comb-honey appliances that had been developed up to that time.

The recent improvements in honey-extractors, uncapping-knives, and methods for handling the honey from the time it is taken from the hives until it is in the cans ready for shipment have given to the producer of extracted honey a great advantage over the producer of comb honey in handling large quantities of honey. While machinery is helping out in the production of extracted honey, comb-honey production is still done to a large extent by hand.

Among the time-consuming processes in comb-honey production are the preparation of the supers before being given to the bees and the scraping, grading, and packing of the finished honey, nearly all of this work being done by hand.

Fortunately before so many potential inventors deserted the ranks of comb-honey

RAPID FOUNDATION FASTENER

Fifteen Hundred Sheets of Foundation per Hour Fastened in Sections by One Person

By Geo. S. Demuth

producers to take up the production of extracted honey some excellent machines were devised for folding sections and fastening foundation in them

accurately and rapidly, the Rauchfuss combined section press and foundation-fastener and the Root section-press and steam foundation-fastener being among the "last words" in machines for this purpose. With either of these machines the work of folding sections and fastening foundation can be done neatly and rapidly, apparently leaving but little to be desired in apparatus for this kind of work, but when hundreds of supers must be prepared the time required, even with the most rapid combined press, is no small item.

Described in 1893 but Dropped Out of Sight.

Back in 1893, long before the hot-plate machines were really perfected as we now know them, R. L. Taylor described in the Beekeepers' Review a simple device which he was using for fastening foundation in sections. It had been described editorially in that magazine five years previously, and it is mentioned but not described in Cook's Manual of the Apiary. No one ex-

cept Taylor seemed to be much interested in the device, and it dropped out of sight entirely, altho a somewhat similar but less efficient device has been used by certain comb-honey producers for years.

In regard to the speed of fastening foundation with this device Mr. Taylor wrote as follows: "With two or more boards and sufficient help to put on and take off the sections, one person may fill 1500 sections per hour and the foundation is fastened in such a manner as to leave nothing to be desired in that respect." Perhaps many who read this article thought, as I did, that the printer must have made a mistake in setting up these figures, adding an extra cipher on the end. Fifteen hundred sections per hour seemed to be entirely too great a claim for such a simple apparatus when 200 per hour is about all a good operator could expect to do when using any of the ordinary hot-plate machines, tho by using a combined machine, sections can be folded and the foundation fastened in them at the rate of about 200 sections per hour. The figures given by Mr. Taylor were for fastening the foundation only, the folding and handling of the sections, as well as handling the foundation, being done by helpers.

Statement Stood Unchallenged 28 Years.

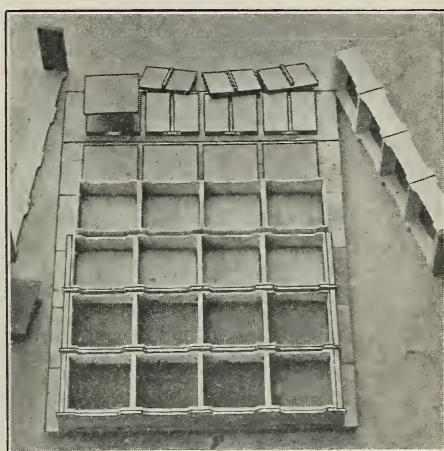
Every time I have run across this article in looking up references in this particular volume of the Beekeepers' Review the statement that one man could fasten sheets of foundation in sections at the rate of 1500 per hour has stood out as a sort of challenge, but partly on the supposition that there was an error in the figures I did not build an apparatus to test it out until last spring. The one I built improved on the device described by Taylor, to adapt it to present-day construction of comb-honey supers, the modification fortunately making much greater speed possible in putting the sections into the supers, since they are handled in groups of four instead of individually.

The device was tried out in putting up the sections for this season's crop in my own apiaries, and I was greatly surprised to find that without previous experience one person can easily fasten foundation in the sections neatly and securely at the rate of 1500 an hour without any special effort to attain speed; but, as stated above, this does not include folding the sections and putting them into the supers nor the handling of the foundation. The actual fastening of the foundation, after all, takes much less time than folding the sections, putting them into the supers and piling the supers away. This foundation-fastener worked out so well in this season's test that it well deserves a description of its construction and operation in this journal.

How It Is Constructed.

The apparatus consists of a series of blocks mounted on a board, the number of

blocks being not less than the number of sections required to fill a comb-honey super. The lower portion or base of each block for the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ sections is $3\frac{1}{8}$ inches across the grain of the wood, $3\frac{1}{8}$ inches with the grain of the wood, and about $\frac{1}{2}$ inch in thickness. On the upper side of each block is a groove $\frac{1}{4} \times \frac{1}{4}$ inch, running with the grain of the wood in the middle of the block. Another block $3\frac{1}{8} \times 3\frac{1}{8} \times \frac{1}{4}$ inch has nailed to the lower side a piece $\frac{1}{4} \times \frac{1}{4}$ inch by $3\frac{1}{8}$ inches, this small piece being nailed in the middle of the block to correspond with the groove in the lower block into which it fits loosely. When the upper block is in place it becomes a sliding platform, the $\frac{1}{4} \times \frac{1}{4}$ -inch piece on the under side of the upper block sliding in the groove in the lower block as a guide. Small pieces of tin $\frac{1}{4} \times \frac{1}{2}$ inch nailed across the grooves at the ends of the lower blocks act as stops so that the sliding platform can



The blocks, each with its sliding platform, are mounted on a board in a horizontal position, so that the section-holders can be slipped in place over the rows of sections. Three of the sliding platforms in the farther row are turned over to show the construction.

be moved back and forth only $\frac{1}{4}$ inch, the $\frac{1}{4} \times \frac{1}{4}$ -inch guide being $\frac{1}{4}$ inch shorter than the block.

These blocks are mounted on a board, four in a row, the grooves for the sliding platforms being crosswise of the row. Six such rows are needed for supers for 8-frame hives, seven for supers for 10-frame hives when $4\frac{1}{4} \times 4\frac{1}{4}$ sections are used, and eight rows when $4 \times 5 \times 1\frac{1}{8}$ sections are used in supers for 10-frame hives. The blocks are so spaced in each row that when the sections are dropped in place over them, they will touch each other, and the section-holder or wide frame, whichever is used, can be slipped in place over the four sections in each row. The apparatus shown in the illustration was made up by fastening

each row of four blocks to a separate board, the six boards being in turn nailed to two cleats running in the opposite direction under the ends of the boards, thus making up a board to hold enough sections for a comb-honey super for the 8-frame hive. This rack should be placed on a table or bench at a convenient height so one operator can work on each side of it.

How the Fastener Is Operated.

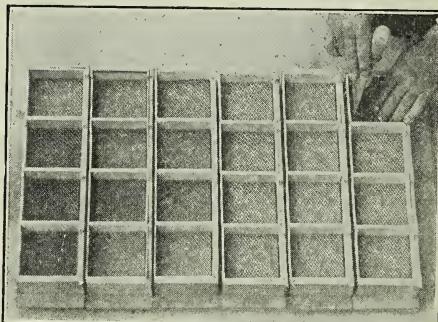
To work to best advantage when a single rack is used, one person should fold the sections on a folding machine dropping them as they are folded over the blocks on the rack, then drop the sheets of foundation in place; while the other person working on the opposite side of the board slips the section-holders or the wide frames in place over the rows of sections, fastens the foundation, puts the section-holders with the sections into the supers, and piles the filled supers away. This usually leaves a little extra time for the one who fastens the foundation, which can be used in helping to drop the sheets of foundation in place. A better way is to have two racks, one on each side of the operator who is folding the sections, so that this operator does not need to stop while the other person fastens the foundation and clears the rack ready for more sections.

When the sections, section-holders or wide frames, and the sheets of foundation are all in place, each frame of sections is first pushed in the direction of the bottom-bar to crowd each of the sliding platforms in line with the blocks upon which they slide, then back in the opposite direction to crowd the sheets of foundation against the bottom-bars of the sections. The bottom-bars of the sections are now snug against the blocks, and the sliding platforms are all pushed back even with the lower blocks. This leaves a space a little over $\frac{1}{4}$ inch between the blocks and the top-bars of the sections, and the sheets of foundation project beyond the sliding platforms and nearly touch the top-bars of the sections. Each frame of sections is then pushed endwise as far as it will go, then back part way, and finally back again in the first direction about 1-16 of an inch to make the sheets of foundation clear the sides of the sections. These lining-up movements could be done for all the frames at once if the rows of blocks are so spaced that the frames touch each other so they can be moved *en masse*.

With an ordinary paper-hanger's scraping knife with a four-inch blade, that has been heated "smoking hot" over the flame of a gasoline stove or a large alcohol lamp, the foundation can be fastened in all of the sections on the board quickly and neatly before the knife needs to be reheated. In doing this the operator stands on the side of the bench that will put his right hand toward the top-bars of the sections. The knife is inserted between the edge of the

sheet of foundation and the top-bar of the section so that its lower edge touches the wood of the section, but the handle is inclined away from the top-bar of the section. The foundation is then pushed against it with the middle fingers of the left hand while the thumb and little finger rest upon the edge of the section. When the knife is hot enough a mere touch is sufficient, the knife being withdrawn immediately and the sheet of foundation pushed firmly against the section. The sliding platform moves with the sheet of foundation, thus preventing any twisting motion of the sheet of foundation, which would cause the lower corners to bind against the sides of the section. It requires only 40 to 50 seconds to fasten the foundation in 24 to 28 sections in this way. When the last row is finished the knife is put back over the flame, and the frames of sections are put directly into the supers beginning with the one in which the foundation was fastened first, which by this time is cool enough to take off.

Each sheet of foundation now swings free from the sides of the section, there being



The knife is held at a slight angle from perpendicular, with the lower edge of the blade touching the wood of the section.

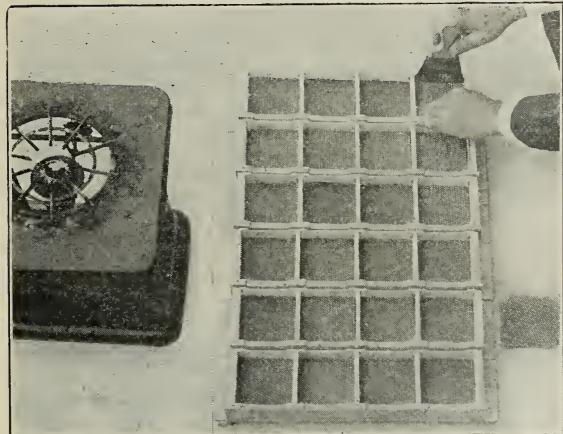
no binding to cause the foundation to buckle, as is often the case when the foundation is fastened in the sections before they are put into the section-holders. When the section-holders or wide frames are taken out of the super to put them over the rows of sections on the fastener, each separator or fence is permitted to fall over on its side, leaving its lower edge where it was before removing the section-holder or wide frame. When the section-holders or wide frames filled with sections are put back into the supers, each separator or fence needs only to be stood up again, its lower edge not having been moved from the position it occupies when the super is filled. By standing up each of the separators with one hand while the frame of sections is being brought into place with the other hand, the sections can be put into the supers quite rapidly.

One Person Fills 100 Supers Per Day.

While two persons can put up sections in

this way to better advantage than one I found that, working alone, I could fold the sections, fasten the foundation, and put the frames of sections into the supers at about the same rate that sections handled individually can be put into the supers after they have been folded and filled with foundation by another on a combined machine. The reason for this is that the sections are handled individually only once (as they are folded and dropped in place over the blocks), the greater speed in the actual work of fastening the foundation, and the fact that the sheets of foundation all swing clear of the sides of the sections, none of them binding and needing the edges melted off with a hot knife to prevent buckling.

Working alone I found with this apparatus I could fill 100 supers, each holding 24 sections, in 10 hours. This includes folding the sections, fastening the foundation, putting the sections into the supers, and piling the filled supers away. With one helper to fold the sections and drop the sheets of foundation in place, it was much easier to put up 200 supers in 10 hours than



The foundation is pushed squarely against the hot knife, which is instantly withdrawn, while the melted edge of the foundation is pushed against the wood, the sliding platform moving with the foundation.

to put up 100 when working alone. This is twice as many as two of us have ever been able to put up in the same time when using any other foundation-fastener. With several boards and enough help so that one person could fasten foundation continuously, not having to stop to put them into the supers, handle any foundation, or pile the supers away as they are filled, one person can easily fasten the foundation in 1500 sections per hour. In this case it is necessary to have two irons, one on the flame while the other is in use. In fact, I found that I could fasten the foundation at the rate of over 2000 per hour for short periods.

This, of course, was fastening the foundation only, the folding and handling of the sections, as well as dropping the sheets of foundation in place, being done by others.

There is no wasting of wax when the fastening is properly done, the melted wax on the edge of the knife being wiped off on the edge of the sheet of foundation if the knife is withdrawn immediately after touching the wax each time. After a season's use there was not a drop of wax to be found on the fastener anywhere. Supers were hauled to the out-apiaries, many of them being stood on end in the load, and there was no trouble from foundation dropping out.

If a bottom-starter is needed, the full sheet of foundation can first be fastened to the bottom-board of the section, then cut where desired, and the larger sheet fastened to the top-bar of the section. Some method for cutting off the bottom-starter while the sheet is in place can, no doubt, be worked out by which all four sheets in each frame can be cut at one operation. When this is done the lining-up movement of the frames would need to be such that the foundation projects beyond the sliding platform at both top and bottom. It is not necessary to touch the foundation to line up the sheets, this being done for all the sheets at once, by moving the frames. In our locality bottom-starters are of no advantage when this method is used.

Some may ask why such speed is desirable in putting up sections, since the apparatus for fastening foundation is in use but a few days in the year, but since as much can be done in one day with this device as in two days by other methods, one day out of two is saved and can be used in doing something else. If it requires 10 days by the old method to put up enough sections to hold the season's crop, and five days by this method, there is a clear gain of five days in the season's work, which in my own case happens to be one-sixth of the time I

have been able to devote to my apiaries each year. Again, instead of putting up sections far in advance of the time they are needed, the sections and foundation can be taken fresh from the boxes and put up as the bees need them. Knowing that two persons can prepare 200 supers for the bees in 10 hours, there is no reason for worrying about giving the room fast enough.

Now if some one will devise some simple apparatus which will enable us to scrape, grade, and pack twice as many cases of comb honey per day as is now possible, the handling of comb honey will no longer be burdensome.

FRANK COVDALE'S excellent and thought-inspiring article in regard to the size of apiaries, on page 403 of Gleanings for July, 1920, serves

to call attention to one of the most important questions connected with commercial honey-production. I believe, with Mr. Coverdale, that we all too often underestimate the honey-producing powers of our apiary locations.

C. A. Hatch of Wisconsin told many years ago, how he had decided that 100 colonies would be the best number in one of his apiaries; but later a competitor located as large a yard within a very short distance, and yet there was no material reduction of the yield per colony. Such instances have occurred in the experiences of very many extensive producers.

Some Former Large Apiaries Now Greatly Reduced.

From about 1904 to 1910 or later Geo. E. Dudley and his brother, H. C. Dudley, kept from 200 to 400 colonies, operated for comb honey, in one location near Middleton, Ida., and secured good crops; but, during recent years, many less bees in the same locality usually produce far less honey per colony, owing to a reduction of the acreage of alfalfa, and the cutting up of the large ranches into small farms which are probably more efficiently farmed, the alfalfa not being allowed to bloom so much as formerly.

Near Arcadia, Ore., some years ago, W. H. Pennington operated a single large apiary for many years, having from 300 to 500 colonies in one yard, and some of his yields were phenomenal, but changes have taken place and now the location is a poor one. Before selling his business, Mr. Pennington increased the number of his colonies but kept them in small apiaries of perhaps 100 colonies or less.

Near Payette, Ida., R. D. Bradshaw for several years operated a large apiary of 300 to 600 colonies; but, owing to the increased number of apiaries in the locality, as well as the smaller fields of alfalfa, his apiaries are now of moderate size.

Some years ago one of my apiaries of 180, spring count, was increased to 260 colonies, and produced over two-thirds of a carload of honey. This apiary was then gradually increased to a final limit of 540 colonies, but never yielded a good crop after passing the 180 colonies, spring count. Was the location overstocked? No, but the ranchers found the growing of red-clover seed so profitable that the acreage of alfalfa was reduced very greatly. Even the largest num-

OVERSTOCKING A LOCATION

When Good Yields From Large Apiaries May be Expected. Why Locations Change

By E. F. Atwater

ber of colonies in this apiary always bred up nicely, and went into winter quarters heavy in stores, but the nectar for a large yield was not to be had.

Reduced Yield Result of Reducing Size of Ranches.

In a good alfalfa location, overstocking is probably seldom the cause for reduced yields, but rather the change which occurs sooner or later in the breaking up of the large ranches into smaller tracts with such diversified farming that there is no alfalfa in large tracts, the small fields of alfalfa being so quickly cut that the bees cannot gather a large surplus.

At this time I have only one apiary in the old-time locations of 10, 15, or 20 years ago, as the change described above has rendered beekeeping unprofitable except in the newer regions.

In the location where I formerly had the large apiary described, there are reports that the ranchers are no longer securing the large yields of red-clover seed which were secured when there were millions of eager workers ready to help pollinate the blossoms. Perhaps you may retort that the honeybee does not pollinate the red-clover blossoms, but when the alfalfa has all been cut, and the bees are seen all over the red-clover fields, the writer will believe until the contrary is proved, that much of the seed crop is due to the work of our honeybees.

One who has never heard the great roar of the flying bees in yards of 500 colonies or more, would be puzzled, when quite a distance from the yard, at the roar of flight of these hundreds of thousands of pairs of tiny wings.

The writer for several years had a comb-honey yard of 200 to 300 colonies and never observed evidence of overstocking. Yards of 150 to 200 colonies, run for extracting, have given good results.

It has occasionally happened that some one has located an apiary very near one of my yards; yet, if he has been a good bee-keeper, both have had good crops, but no one has ever located near any of our largest yards. Recently, an exceptionally good bee-keeper located a yard between two of ours, yet one of these yards was, that season, one of the most profitable of our apiaries. I never abandon a location because of crowding by others, but instead I increase the number of colonies in that locality. In poor seasons, even the very small yards do poorly.

Some Disadvantages of Large Apiaries.

The large apiary of 200 colonies and upward has many advantages in economy of operation, yet for other reasons there are now

but few such yards in western Idaho and eastern Oregon. First, if robbing occurs, and an undiscovered case of foul brood is robbed, either in the apiary, or belonging to some careless farmer, there is great danger of infecting a large number of colonies. A few years ago, one of our apiaries of 100 colonies was robbing a yard of about 30 colonies near by, nearly all foul, yet only 69 of our colonies were infected.

If our yard had contained three or four hundred colonies, the loss would have been great. In spring and fall, the small apiary is far easier to work without serious trouble from robbing. The comb-honey producer, with his little one-story hives, can better cope with this robbing nuisance; but the extracted-honey producer, with his three, four, five, or even six or seven story hives, must remove honey at times when conditions are so conducive to robbing that he sometimes wishes he had never seen a bee. Then the robbing is a serious handicap, especially in large yards and during or after the honey flow. This robbing can be partially overcome by the use of queen-excluders, bee-escapes, and by working part of a yard, then moving to another.

In the irrigated regions, with the increasing area intensively farmed, it is becoming more and more difficult to find places to put an apiary, as land values are very high, and almost no one will have an apiary near a cultivated field, since, owing to the absence of trees, bees fly low, especially on windy days, and may make trouble for men and teams at work in the fields near by.

Because of new land going into cultivation, odd corners being leveled and cultivated, and changes of ownership, apiaries must often be moved, and the small apiary is easily moved to a new location.

I hope to own the land on which one of our best apiaries will be kept, and will then again experiment toward a large yard, provided there are not several yards near by, for unquestionably there is a limit somewhere.

When Large Apiaries Are Advisable.

In a good location, where there are few bees near by, where there is small change in the crops raised from year to year, where the beeyard is surrounded by trees so that the bees do not fly low enough to be a nuisance to others, where reasonably good crops may be expected from year to year, and where there is a good supply of minor plants to provide spring and fall feed, perhaps few fields of endeavor hold more promise than testing one's locality to determine if 200, 300, or perhaps more colonies, may yield good crops, for there is no question but that honey can be raised far cheaper in a small number of large yards than in a large number of small yards, other factors being approximately equal.

Meridian, Ida.

[In some carefully conducted experiments by the U. S. Department of Agriculture in 1911, it was found that the honeybee is as efficient a cross pollinator of red clover as the bumblebee. See United States Department of Agriculture Bulletin No. 289.—Editor.]



One of E. F. Atwater's apiaries in Idaho. This apiary is located on an unirrigated spot but near irrigated fields. Such apiary sites are difficult to find.

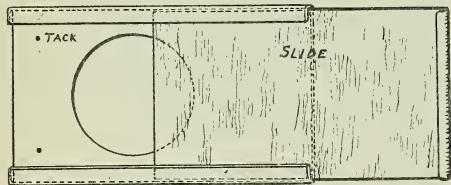
FROM THE FIELD OF EXPERIENCE

A NEGLECTED CONVENIENCE

The Hanson Ventilator Is Not Often Mentioned,
the Inexpensive and Useful

In the Beekeepers' Review for 1911, on page 175, is an article by E. F. Atwater in which the Hanson ventilator is mentioned and a cut shown, but nowhere else in bee literature is it mentioned so far as I know, yet those who use it would not willingly abandon it and have found it convenient in so many ways that they wonder why it has not come into general use.

It is placed about the middle of the front of each super and hive-body and is especially adapted to the needs of extracted-honey producers. It is made of galvanized iron, as shown in the accompanying drawing, the hole being $1\frac{1}{4}$ or $1\frac{1}{2}$ inches in diameter. The long edges of the part which is fastened to the hive are folded over for $3/16$ of an inch to form a groove for the slide which closes the hole or for a bit of screen



The Hanson ventilator, made of galvanized iron and tacked over a $1\frac{1}{4}$ -inch hole in end of hive-body.

wire-cloth or of queen-excluding zinc. Do not make the mistake of painting over the ventilator when repainting a hive, as it will interfere with the free action of the slide.

This ventilator is being used considerably thru the West, and the principle of a hole in the super has long been used in the East; but when wanted closed, the closing has usually been done with a bit of section tacked on, which is far from satisfactory. Those Hanson ventilators made for me cost two cents each, being made by the local tinner from scrap stuff during spare time, but they surely could be included with the hive as it comes from the supply dealers without appreciable additional cost. Those who know its advantages feel that supply manufacturers would be conferring a boon on the industry if every Langstroth super should be equipped with a Hanson ventilator.

We all know how well the bees like to use an auger hole for an entrance, and this ventilator provides just that thing, with the result that many of the field bees will use this entrance to one of the supers in preference to the regular entrance, thus remov-

ing the fear anyone may have of a queen-excluder being a honey-excluder, as a great part of the nectar carried in does not go into the brood-chamber, but directly into the super where it is wanted and so never has to be carried up thru the excluder at all.

On hot days and evenings when bees hang out at the entrance in great bunches, it is only a few minutes' work to open the slides in the Hanson ventilator, and it makes the beekeeper happy to see the little fellows rush inside and get busy where they ought to be. In ten minutes the front of the hive is often cleared. Then, if less ventilation is wanted, the bees just form a ring around the edges of that auger hole and regulate the ventilation to suit themselves; and if the beekeeper is absent or neglectful, and cold weather comes on in the fall with the slides still open, a little bunch of bees will plug up that hole solidly, even becoming detached from the cluster, staying there even when they are too chilled to move freely.

Another use is in the making of increase and in having queens mated from the upper story. When colonies are strong and the time is right, and you want to take brood from the brood-chamber, put the queen below the excluder on combs or foundation or starters as the case may be, then the storage supers on top of the excluder, with another excluder above the storage supers, and on top of this second excluder place the super of brood with the Hanson ventilator open or partly open and turned to the rear. Then when you see, anywhere in the apiary a Hanson ventilator on the rear of a super, you know at once what is going on there, and if you give a ripe queen-cell, there will be a good colony there to set off on a new stand within a few weeks. If no increase is wanted, simply kill the old queen and put the top brood-chamber with the young queen in it down on the bottom-board under the old brood-chamber and the hive is requeened without any trouble. This is an easy method of swarm control, and the Hanson ventilator adds to the ease of doing it.

The ventilator may be used for the entrance to the brood-chamber in a nucleus, closing the regular entrance, as a round hole is easily defended or the slide may be closed so as to admit only one bee at a time. In making nuclei, it is easy to slip in a piece of wire cloth closing the regular entrance as well as the ventilator; then make the nuclei and place them where wanted, with no danger of suffocation. Then when you wish, just open the ventilator enough to allow a bee to pass, and leave the wire cloth closing the entrance. When you wish to move to another location, just close the slide, and

FROM THE FIELD OF EXPERIENCE

your nucleus is ready to place where you wish it. This can also be done with full colonies, the top and bottom screens being put on all ready for moving, the bottom-board, of course, being turned so the bees cannot run under the hive; the ventilator being open now serves as the entrance. When evening comes all the bees will find their way into the hive, and it is very quick work to go around and close the slides, when the hives are bee-tight instantly, all the work of preparation for moving having been done by daylight. When the side is closed, it stays put, not being pulled off or split off, as often happens with a piece of section.

The accompanying drawing shows a Hanson ventilator about three and one-half inches long by two and one-eighth wide, with the edges turned over 3/16 inch to form the groove for the slide. It is such a simple, inexpensive little device and so useful in many ways, which will be discovered only when the beekeeper begins using it, that I believe its use should be promoted.

Washington, D. C. E. L. Sechrist.

SOME ENGLISH APIARIES

Typical Small Apiaries of England and Some English Beekeepers

Beekeeping in England is almost overwhelmingly conducted in small apiaries. More than a ton of honey is rarely taken in one yard, and that is probably an assem-

blage massed for the heather from several smaller summer establishments. Mr. Bartlett is perhaps the most extensive English beekeeper. He usually harvests from some five hundred hives scattered over a part of Oxfordshire, and he has also a monopoly of beekeeping in Scilly Isles, thanks to an agreement with the sole landowner. He believes that the British bee could make a new start from this point, whence an immune strain could take the place of the disease-rotten medley of ancient and imported stock that some people think populates the mainland. This idea not unnaturally excites the jealousy of other breeders and bee-merchants.

I have not been able to visit any of Mr. Bartlett's apiaries. There would, however, be nothing special in a photograph of one of them, for this English bee-king, like others, finds it essential to avoid the disaster of disease by splitting his bees among moderate-sized yards. In spite of all precautions, he was practically wiped out a few years ago.

Mr. Ford, a retired schoolmaster, has a first-class little garden apiary near the garden town of Cheltenham. His ambition is to stay at 50 uniform strong stocks. Two years ago he reached 49, then had a serious setback from which as yet he has only half recovered. In their long row under the old apple trees, facing a hedge perhaps a trifle too high, his bees were gathering clover honey hand over fist when I visited them. The wholesalers take it greedily at a shilling



A crowded apiary near Gloucester, England.

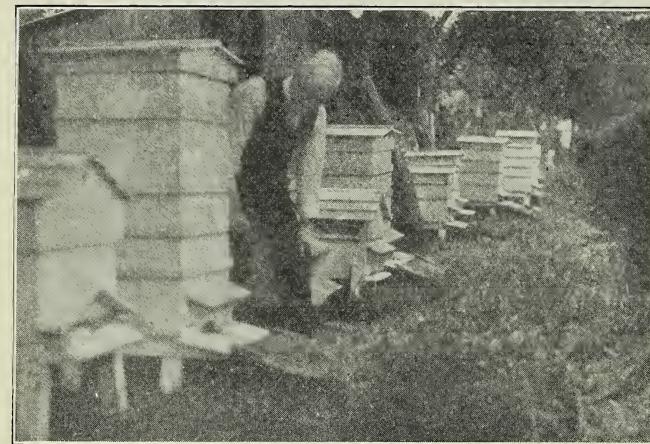
FROM THE FIELD OF EXPERIENCE

per pound, bottles extra, and Mr. Ford should add nicely this year to the not inconsiderable savings that his bees have brought him for many years. Last winter he rendered down 1,500 combs that would have been of great value to him intact, if there had not been disease among them.

A small orchard apiary of another kind

combs almost like guardsmen on parade. The prettiest bee of all and one of which Mr. Swaffield speaks very highly is a Carniolan-Italian hybrid, touched all over with pale gold in a very pleasing manner. The stock, a very strong one, was being goaded by all means into swarming, to see how long it would resist, which it had done to an extent almost to warrant the description non-swammer. It has since given a strong shook swarm and 200 pounds of honey.

Mr. Swaffield's country is one of the finest honey-lands in Great Britain. You can see for miles across the swelling uplands, cut into fields all ploughed, and every third patch gay with sainfoin, crimson clover, turnip kept for seed, or the charlock, the weed welcome to beekeepers and almost invincible to the farmer. Up here, Mr. Wood discovered the virtues of wild white clover which he sells



Mr. Ford, a retired school teacher, derives great pleasure from the care of his little apiary near Cheltenham, England.

is that of Mr. Brinkworth at Stroud. He is a successful breeder of queens, has never had Isle of Wight disease, tho it has raged round him for nearly 20 years, and he has been instrumental in restarting hundreds who had lost all but heart thru that malignant plague. In the past he has imported many queens from Italy, Carniola, and the Caucasus, but this year is breeding from his own stock rather than go further, perhaps to fare worse. When Russia gets settled enough, he means to get Caucasians again, for the considers them the best bees he ever handled.

On the other hand, Mr. Swaffield swears by Carniolans. He has three apiaries high among the Cotswolds, in one of which he has an excellent chance of mating pure. Here these pretty bees and their drones are flying by millions and thousands. It is a treat to open the hives, for they are very quiet, standing still on their

after a severe drop at some twelve shillings per pound. He grows about a hundred acres for seed and has a standing agreement with Mr. Swaffield for their mutual advantage in seed and honey. I rather pleased them both by reading a paper at Gloucester last year which showed that for every pound of honey that the bees collected from white clover they helped the



J. E. Swaffield's white clover apiary located in one of the finest honey regions in Great Britain.

FROM THE FIELD OF EXPERIENCE

plant to set 34 pounds of clover seed, or about 300 times as much cash for the farmer as for the apiarist.

We have all heard of Adminsons and of the Apis Bee Club at Benson in Oxfordshire. I give a little view of a part of the Adminson apiary. Dr. Abushady is out of the scene. He was talking with W. Herrod-Hempshall, who was on an inspection tour of restocking apiaries for the Government. At Benson you can examine the merits and other qualities of every race of bees, study all the up-to-date apparatus of beekeeping, and luxuriate in a very fine library. Material equipment, such as buildings, etc., has yet to be supplied as beekeepers wake up to the importance of supporting this central institution with money. Dr. Abushady is a driving force that has overcome many obstacles, and I was glad to find him with plenty of vigor for further advance along what I hope will prove an easier road than

ered that some men are dead, but they lack sense to lie down. I have been closely watching the antics of some so-called honey salesmen, to my great profit, and, in addition to the cash, I have found out that they try to sell God's great gift as an undertaker would sell a casket.

It may be that I am fortunate, in that I was born and raised in dear old Scotland, and fervently thankful that I am an American. I still hold to my native speech, to the great delight of some of my friends. And it may be that my speech and manner as well as good looks help, but I am convinced that in spite of these handicaps, I could walk around some beekeepers who essay to sell their product. And some of my good friends will ask, how would you? I'll tell you.

I was born and raised in a town called Renfrew, famous for its royal origin, and for its godly beekeepers. Mr. McLelland,



Part of the Adminson apiary at Benson, Oxfordshire, home of the Apis Club and The Bee World.

the one already traversed. The Adminson metal comb (semicom) may be said to have won its way now. It is a marvel of construction, which the bees seem to appreciate no less than their masters. The brood-rearing chamber is another very notable gift from Benson to the craft of beekeeping.

G. S. Armsond.

Sheepscombe Strand, Gloucestershire, Eng.

SMILES AND SALESMANSHIP

How a Witty Scotchman Captivates Prospective Honey Customers in Milwaukee

Bishop Quayle says that he gets great fun in watching the actions of folks. It is an inexpensive form of entertainment, but I have found it worth while. I have discov-

the parish minister, and James Blair, a grocer, both fine beemen, were my early instructors. McLelland has passed on; Blair still sells sugar and preaches the gospel. He was my Sunday school teacher and counselor; would that I had listened to him more. He was the most convincing talker I have ever known, for whether his theme was Jesus Christ or bees, the earnest, intelligent knowledge of his subject impressed you.

I have tried to follow his way, with the result that I find no difficulty in selling my crop, and at three cents per pound more than the local selling price. I do not weirdly inform my prospective customers that I have honey to sell. I first captivatingly smile, speak of the joyous day, ask them if they like honey, talk briefly on the bees, and how the honey is produced, and if they do not begin to ask questions (they usually




FROM THE FIELD OF EXPERIENCE

do) I let them sample and ask them to buy.

I may not sell, but I give them my card, and hope that I have booked a customer for another beekeeper, if not myself. If they tell me that they buy regularly from another fellow, I inquire his name, and congratulate them on their good fortune in dealing with a good man (for Milwaukee County beekeepers are good men) and advise them to continue. They may never buy from me, but that pasteboard is not wasted. Last Saturday afternoon I took a load of honey to a public market, talked until my tongue was tired (that means something for me), came home with \$33.00 in my daughter's pocketbook (you can't trust a Scot with money), and my lone competitor had sold two quarts. And think of the fun I had in addition, and the infectious joy of it! And as I "stepped on her," the rustling autumn leaves floating in the sky seemed as banners that God himself has put out.

My good, dear friends, get some joy out of your selling. Grace Allen (bless her) is doing her best to add romance to your bee-keeping. E. R. Root is doing his share in trying to make your business a success, but they are as voices crying in the wilderness until you learn to talk entertainingly and convincingly of your product.

West Allis, Wis. Joseph S. Barr.



ANOTHER HARBISON BEE BOOK

Published in 1860. Written by W. C. Harbison, Brother of John S. Harbison

Beekeepers are generally familiar with "The Beekeeper's Directory or the Theory and Practice of Bee Culture in all its Departments," written in 1861 by John S. Harbison, who introduced commercial bee-keeping into California and laid the solid foundation for the industry in that State. It may be a surprise to many, as it was to me, to know that his brother, W. C. Harbison, also wrote a book on beekeeping, issued in 1860. Since a copy of this interesting book came to me this summer, it may be of interest to share a few facts about it with others.

W. C. and John S. Harbison were the sons of William and Margaret Curry Harbison and grandsons of John and Massy White Harbison, and were born in western Pennsylvania. Margaret Harbison was the daughter of William Curry (or Currie, according to the war records of the Revolutionary War), and while the author's initials only are given in the W. C. Harbison book, one will probably not be far wrong in guessing that his full name was William Curry Harbison and that both brothers were named for grandfathers. The father,

William Harbison, was a beekeeper, and in both of the Harbison books reference is made to the fact that the authors learned beekeeping in their youth. John S. was engaged with his brothers (three sons and one daughter in the family) in the nursery business in western Pennsylvania, and they also kept bees. In 1854 he could not withstand the temptation to go to California for gold, and he sailed down the Atlantic Coast, crossed by the Nicaragua route and went to Sacramento. He soon found gold hunting unattractive and started in the nursery business, but, as is well known, he soon took up beekeeping, after going east for some colonies of bees.

The first shipment in the spring of 1857 was made by John alone, but in the fall of 1858 he made another trip east for bees, and this time his brother W. C. returned to California with him. In both of the Harbison books directions for shipping bees to California are given. Evidently California did not have the attraction for W. C. that it had for his brother John, for he returned to Chenango, Lawrence County, Pa., in time to write his bee book and publish it in 1860.

The two books are not at all alike in make-up, so that they were obviously written independently, and, in fact, I have failed so far to find in either one any reference to the other book. W. C. wrote his book in time to have it published in 1860, while John did not get his out until 1861. Both books show evidences of a thoro study of the bee-keeping literature available at the time, and one must conclude that the Harbison brothers were thoro students in their chosen field. The shallow Langstroth hive did not appeal to either of them, and while they give great credit to Langstroth for his invention and work on beekeeping, they both preferred a deeper hive. The Harbison or California hive was invented and patented in 1859 by John S. Harbison, and in both books this hive is described and recommended.

A biographical sketch of John S. may be found in vol. II of "A History of California," written by James M. Quinn, and from this sketch it is clear that the Harbison family was a notable one. The records of the family run back to the year 1435 in Ireland, and several ancestors of the Harbison brothers had experience in the early Indian wars and in the Revolutionary War. Their grandfather, William Curry, was chief armorer in the field under General Washington, was in eight battles, was present when Washington crossed the Delaware, and was in charge of the armory at Carlisle in which many noted British prisoners were imprisoned.

Little information is available regarding W. C. Harbison, except the information as to his keenness of observation which he has shown in his book. He preferred the quiet-

FROM THE FIELD OF EXPERIENCE

ness of Pennsylvania to the pioneer life of California, and probably he did not make as much money from his bees as did his more daring brother. He did not have the opportunity in the East to establish so great a reputation as did John, by founding bee-keeping in the State which has for years lead in honey-production in the United States.

The W. C. Harbison book is entitled "Bees and Beekeeping: A plain practical work; resulting from years of experience and close observation in extensive apiaries, both in Pennsylvania and California, with directions how to make beekeeping a desirable and lucrative business." The book was published by C. M. Saxton, Barker & Company of New York City. It contains 287 pages and, like his brother's book, tells how to obtain a right for the use of the Harbison hive.

E. F. Phillips.

Washington, D. C.



THE MARKETING PROBLEM

Lack of Uniformity in Prices. Folly of Peddling Honey at Wholesale Prices.

I am just wondering if all who report the local markets for honey on page 609 really understand the questions. Referring to the last column, which seems to mean the retail price of a five-pound package of extracted honey, I note that there is a variation from 60c in two or three States to \$1.75 in southern Idaho. I doubt if anyone anywhere is getting \$1.75 for five pounds of extracted honey, and especially in southern Idaho where they are offering extracted honey at 9c to 10c a pound in single five-gallon cans. If anyone is charging \$1.75 retail for five pounds it would seem to be a little like profiteering. I notice several quote five pounds of extracted honey at \$1.50, which is not quite so bad, but surely not much honey will be used at that price these days, at least that is my thought.

Here in Spokane just now honey (extracted) is retailed at all kinds of prices—from 15c a pound where they bring their own containers to hold the honey, to 45c for 1½ pounds net, or 34c a pound. Yes, and one store was asking 50c for one pound two ounces.

I know there are altogether too many middlemen, but there are not too many retailing honey who really "know honey." If I had thought otherwise I certainly would not have gone back into the game again. But I felt that possibly I might be of real service to honey-producers in the Pacific Northwest country, provided I can have their co-operation. Of course, if they are not willing to co-operate, either among

themselves or with dealers who desire to help, then the producers deserve to lose out. My sympathies for years have been entirely with the producers, but when they expect conscientious dealers or retailers to help them dispose of their products, and "do it for nothing and board themselves," then I say such producers should be ignored, and left to flounder along as best they can.

But we have some queer beekeepers here in the Pacific Northwest, too. For instance, they will sell retail at the same price they expect dealers to pay them. There was a Yakima beekeeper here in Spokane for a few days recently, selling and delivering honey to consumers at \$1.40 for a 10-pound pail. That beekeeper expected me, a dealer, to pay him \$1.40 f. o. b. Yakima for the same honey. Of course I would have to pay the freight to get it to Spokane. There was really no good excuse for retailing the fine Yakima honey anywhere at 14c a pound with cost of pail thrown in. Every pound of it should go at not less than 20c or 25c a pound to the consumer, and would bring that price in small quantities if beekeepers or producers were properly organized. But they must be willing that a dealer who advertises, rents a store, and puts in his time, should receive fair returns for his investment and efforts. Until honey producers are willing to grant this to dealers, they deserve to lose on their honey. "Live and let live" is a pretty good policy to pursue.

By the way, is honey "the oldest food?" I supposed that meat as food is older. I notice an advertisement in the September "Good Housekeeping" that says honey is the "oldest food." If I am wrong I will be glad to be shown. If I am right, then I doubt if it will pay to spend good money to advertise or tell the world what isn't so.

Spokane, Wash. George W. York.



POLLEN IN BEES' DIET

Why Pollen is Necessary. Composition of Larval Food and Royal Jelly.

If you have ever eaten a piece of comb honey containing pollen, you know that the latter is pretty apt to spoil the pleasure of the treat. For the bee, however, pollen is a life-element, just as important as nectar, and it may well be called bee-bread. Altho honey is an ideal food in many respects, it is almost entirely lacking in albuminous matter—the muscle-forming substance. But pollen is very rich in nitrogenous matter, containing also some other elements not found in nectar, altho the amount of all these substances varies with the different kinds of pollen. A single blossom usually

FROM THE FIELD OF EXPERIENCE

contains thousands of these tiny pollen grains, which, under the microscope, show a particular shape for every variety of plant. This fact sometimes furnishes useful information in the analysis of honey. The color of pollen also varies much, but yellow seems to be the most common. Once I saw even black pollen—black as ink—which contrasted singularly with the snowy white of the new comb in which it was found.

Some pollen is quite dry; but generally it is more or less moist, and in some cases even quite sticky. In a park in Buenos Aires I once had a chance to observe a typical case of sticky pollen. A tree of the hot northern forest regions, of the variety *Chorisia insignis*, was just in bloom, and visited by a few bees. The blossoms were very numerous, white, and large, resembling the garden lily. On account of the unusual stickiness, a bee after visiting such a blossom remained suspended in the air at the same spot, about two inches from the flower, constantly rubbing its legs as it gathered its baskets full of yellow pollen. The bee remained in this attitude about half a minute, which at first raised the question whether it was not a syrphus fly; but being only about three feet from my eyes, I could convince myself that it was really a bee.

In some parts of Europe the hazel, a wind-fertilized plant, furnishes the bees with the earliest pollen in spring. This pollen is very dry, containing only about 5 per cent of water. The albuminous substances amount to only 30 per cent, while about 60 per cent is composed of carbo-hydrates (among which are starch, 5 per cent, and cane sugar, 15 per cent). There are also resinous substances, fat, pigments, ash, and other indigestible matter, such as the shell of the pollen-grain.

The pollen of the common pine is much less valuable, with only 16 per cent of albumen, while the indigestible shell represents 21 per cent. As is seen from this, the pollen-grain is provided with a shell, and it is only after being crushed by the mandibles and by the action of the chylus-stomach that the nitrogenous constituent is released.

Many beekeepers have a mistaken idea that the white jelly with which the larvae are fed is only a mixture of pollen, honey, and water. In reality this jelly, or at least the greater part of it, is a direct product of secretion by certain organs of the nurse bees, and can, therefore, be compared to the milk of mammals. The laying queen also requires for her function a comparatively great quantity of albuminous food (not found in honey), so there is no doubt that at least a part of the food given her by the bees is prepared jelly—bee-milk.

Very interesting investigations along this line were made by the late Dr. A. von

Planta, a scientist accustomed in his researches to close observation and painstaking care. In fact, he was not only guided by the scientific interest, but just as much also by his love for the little busy worker; for during 20 years, till his death, he had been vice-president of the Swiss Beekeepers' Association. He found that some pollen is only added to the jelly (chyle) given to drone-larvae from the fourth day; while from the fourth day, for the worker-larvae, the jelly is weakened by the addition of a little more honey, but no pollen. The royal jelly, on the contrary, is of the same composition for the whole period—pure predigested jelly (chyle).

The dry substance of royal jelly consists of 45 per cent albumen, 14 per cent fat, and 20 per cent sugar.

A normal queen-cell usually requires about 14 times more dry substance than a drone-cell, and about 90 times more than is given the worker-larva.

The amount of liquid jelly required for the different cells has been found to be: queen-cell, 0.2 gram; drone-cell, 0.01 gram; worker-cell, 0.002 gram.

On the average the royal jelly contains 69 per cent water and 31 per cent dry substance. Drone and worker jelly contains 72 per cent of water and 28 per cent of dry substance.

Ernest Tschudin.

Buenos Aires, Argentine.

COLLEGES AID BEEKEEPERS

State Agricultural Colleges Ready to Help Beekeepers by Giving Practical Instruction

Many beekeepers, it seems, either do not know of or do not appreciate the service available thru the state agricultural colleges.

It was only recently that I learned from our gardener (with whom I was talking over a bee problem that was puzzling me) of the New York State School of Agriculture, located about 15 miles from here on Long Island, at Farmingdale. I called the school on the telephone to inquire if they had a department of apiculture. They replied in the affirmative and said they would gladly give me information regarding bees any week day between the hours of eight a. m. and four p. m.

Whether or not other state agricultural schools offer the same service I cannot say; but if they do, it should be known to everyone interested in bees, and especially to beginners, to whom a little practical instruction from one thoroly versed in apiculture would give confidence in handling their bees.

Magdalen Sproull.

Freeport, L. I., N. Y.

A GOOD deal has been said or written as to whether bees can or can not hear. No organs of hearing have been found as yet on the bee, I believe. The fact that bees make different sounds under different circumstances or conditions has led me to believe that bees could either hear or in some way recognize these sounds. That they are able in some way to communicate their feelings, impulses, or desires to each other and to a whole colony seems beyond dispute, but how?

* * *

Robt. W. Hall, on page 694, gives us an interesting paper on "A Bumblebee Guest." After giving his experience of a colony entertaining and retaining such a guest he inquires, "Do we know of any case of bees driving out or in any way injuring any adult insect except a robber, a strange queen, or drones in their cells?" We have sometimes found in a hive dead bumblebees that the bees had evidently killed but were unable to drag out of the entrance. They may have been considered as robbers, as undoubtedly they were.

* * *

On page 710 Geo. S. Demuth, in giving directions for the temperature of honey for bottling, says the honey should not be heated to a temperature above 160°F., nor held there long, for the flavor of some types of honey will be injured even at 160°F. if kept hot too long. I was pleased to note that he says "some types of honey are more easily injured by heat." There appears to be a great difference in the amount of heat that different kinds of honey will bear without injury to the flavor.

* * *

One of the good things of the November Gleanings is the article by Geo. S. Demuth on the "Quiescence of Winter," page 681. The health of the winter life of bees is told so simply and clearly that it would seem as tho the merest tyro must understand. He says, "To live long, bees must live slowly;" and again, "In a sense wintering may be thought of as putting bees away in cold storage to keep them fresh until spring." When I read such a clear explanation of the principle of successful wintering I cannot help thinking of the advantages of the modern beginner in beekeeping over those of us who were trying to master the subject 50 or 60 years ago.

* * *

The historical review of the various methods of making "Queen Cage Candy," by Dr. Phillips and Jay M. Smith, brings very forcibly to our minds the value of that

SIFTINGS

J. E. Crane

division of the U. S. Department of Agriculture devoted to the interests of beekeepers. Few beekeepers have the time or means to investigate many of the

intricate problems connected with our industry. The recipe for making the best possible queen cage candy is given at the close of the article, pages 690 and 691. We may consider this question as settled and settled right.

* * *

A few evenings ago my daughter brought home from the town library a book entitled, "How Animals Talk," by William J. Long, and published by Harper & Bros., New York and London. The author has had a large experience with wild life in different countries and is a charming writer. He takes the ground that bees, birds, and beasts are often able to express their feelings, desires, or emotions to others without audible speech. He calls this power or ability "natural telepathy," or "thought transference." He illustrates and enforces his argument by an almost innumerable number of examples in wild and domestic animal life. The book is well worth a careful perusal by any or every one who would investigate this subject with more care, or is fond of hunting wild life.

* * *

In the two pages (697, 698) of advice that Mrs. Boyden gives to housewives, there is one paragraph men may well read with profit. She says: "He may be actually starving while eating to excess every day. Fed on a balanced ration that same person will eat much less, feel satisfied, and enjoy better health." To gain a correct knowledge of the value of the various kinds of food one meets with in these days of luxury, and the ability and self-control to choose wisely are of more value than gold or silver.

* * *

The value of windbreaks has not been fully appreciated until recent years. E. R. Root's illustrations of this subject on pages 684, 685, and 686 are not overdrawn nor their value overestimated. We learned our lesson along this line a good many years ago when we found the bees on one side of a yard exposed to the winter winds entirely dead altho in winter-packed hives.

* * *

That is a most valuable report given on page 716 by Prof. H. D. Hughes on Hubam Clover. If this clover seed can be sown with spring grain or on fields of winter wheat and produce a good crop of clover to be plowed under later in the season and thus restore the fertility of the soil, it would seem as tho it would prove almost invaluable.

MOST of us can look back on certain delightful little interludes in our lives, which came to us by accident. Such a good time recently came to the busiest man I know and his wife.

In order to have certain work done on our home we had to leave it for a couple of days, and so we went down to our summer cottage on a little lake a few miles from town, altho it was in November with stormy weather predicted. At the last minute our fourteen-year-old daughter decided she was so busy she would stay in town with cousins, and after one night at the cottage our older son decided he had an urgent reason (feminine, I suspect) for going away for a day or two. That left the family reduced to its lowest terms, for our younger son is in college and I let my young assistant go back to town.

My, but it was cold that Saturday afternoon, for our little cottage is on a high bank above the lake and a perfect gale blew thru the great oaks above it, whistled under it and around it. The fireplace was balky and smoked a trifle, the range in the kitchen did little to raise the living-room temperature, the bedrooms had an icy chill, the lake was a cold gray, flecked with little whitecaps, and the wind was trying to strip the last dry leaves from the oaks.

The busy man spent the day in the office back in town, of course, but late in the afternoon he drove back to the cottage. You know some men can always make a fireplace behave. Well, he is one of them. In five minutes the fireplace had braced up and so had his wife. And then the busy man took a big saw and an axe and went out into the grove to replenish our woodpile from certain fallen trees. In a short time a log nearly three feet long and a foot in diameter was blazing in the fireplace with smaller sticks around it, and we were enjoying a hot supper on a little round table close to the fire. The fire crackled and blazed and glowed red, the wind roared outside, and we decided a summer cottage is not a bad place in the winter even if the ducks were the only ones who were tempted to go in bathing.

After supper we sat in easy chairs and enjoyed the fire for a time, and then the busy man had to go out and cut more wood for the night while I washed dishes and put the kitchen and living room in order.

We went to bed ridiculously early because nothing and no one prevented it and we were sleepy, and the two logs which had been left on the fire made a flickering light which could be seen thru the transom over the bedroom door.

Very early in the morning the busy man

OUR FOOD PAGE

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

rose to investigate the condition of his fire and make sure the water pipes had not frozen. He found a great bed of coals in the fireplace, and his fuel being

gone he dressed and went out and I could just hear him in the distance cracking the Sabbath as well as the log. He came in and reported that it was a wonderful morning, clear and bracing and starlighted. In a short time there was another brisk fire in the fireplace, and I smelled something which warned me I must dress if I did not care to miss a good breakfast. It happens the busy man can cook some things quite as well as his wife can, and enjoys displaying his skill—occasionally. However, he never contributes any recipes to this page. We had fruit, crisp bacon, griddle cakes with honey, and coffee, and we kept the hot things in that condition by putting them on the stone hearth close to the fire.

The busy man says he likes to go to the cottage because he can forget business for a few hours, but I don't believe he ever before did such successful forgetting as during those cold November hours when our only neighbors were the gray squirrels in the oak trees.

ALTHO most of us like to play at pioneering or roughing it we would not be willing to give up permanently many of the conveniences or refinements of civilization such as telephones, automobiles, electrically equipped homes, steam heat, running water, and (shall I say it?) package foods. You see when the senior editor of Gleanings advises people to buy foods in bulk rather than in packages, because the latter are more expensive, it behooves the food editor to be a little careful what she says.

Granting that package foods may have raised the cost of living a little and that many foods are sold in packages which might as well be sold in bulk, there is much to be said in favor of package foods, and I am going to say some of it right here and now.

In the first place, the package is the manufacturer's or producer's guarantee of cleanliness and purity. His reputation depends upon his keeping up the standard of the food in the package on which is his name.

Sanitary packages which are insect and moisture proof tend to prevent waste and may be kept almost indefinitely before opening, while many bulk foods will deteriorate if not spoil under similar conditions.

The package is one of the reasons why we are able to enjoy such a variety of foods produced in all parts of the country from

Maine to California and even in foreign countries.

The convenient package saves both the grocer's and housekeeper's time and is the only form in which foods can be handled in such serve-yourself cash stores as the Piggly Wiggly stores so popular all over the South.

As for honey, it is the clean, sanitary package which enables 50,000 grocery stores throughout the country to keep it in stock, in good condition the year around. Retailing it to automobile customers along the principal highways is a fine thing, so far as it goes, but just ask any intelligent beekeeper if he would like to see the grocery stores discontinue handling honey. It is to the beekeeper's interest that honey should be regarded as a staple food the year around, and the package is the only way in which it can be done.

As to honey in small glass jars, any honey salesman will tell you how difficult it is to persuade people in the cities to buy large packages. A honey salesman once said to me, "Mrs. Boyden, how can you expect people who buy bread by the slice to buy honey in large packages?" He told me there actually are people in the congested parts of some of the large eastern cities who buy a few slices of bread at a time.

Also, the small honey jar is attractive enough to put on the table, and we all know how difficult it is to avoid waste in transferring honey from a large can to a serving dish. And don't forget that several jars of honey in a little basket with a spray of holly makes a most attractive Christmas gift for some honey-loving friend.

CHRISTMAS GOODIES.

CARAMELS.

1 cup granulated sugar	$\frac{1}{2}$ cup sweet milk
1 cup brown sugar	1 tablespoon butter
$\frac{1}{4}$ section of honey	1 teaspoon vanilla
(comb and all)	1 cup chopped nuts
1 cup cream or evaporated milk	Few grains salt

Combine all the ingredients but the nuts and vanilla and cook over an asbestos mat, stirring occasionally, until the thermometer registers 250 degrees F. or until a little dropped in ice water is of the right consistency for a caramel. It must be carefully watched the last few minutes of boiling to prevent scorching. When done add the chopped nuts and vanilla and pour without stirring on to a buttered platter or shallow pan. When partially cool mark in squares, and cut and wrap in oiled paper when cold. Slightly sour cream may be used instead of sweet.

One square of chocolate added to the above will make delicious chocolate caramels.

FIG FUDGE.

$\frac{1}{4}$ cup chopped figs	$\frac{1}{4}$ teaspoon ginger
2 tablespoons honey	$\frac{1}{2}$ cup cold water
2 cups granulated sugar	1 tablespoon butter

$\frac{1}{2}$ cup chopped hickory or pecan nuts

Combine all the ingredients except the nuts, stir until the sugar is dissolved, and cook until it makes a very soft ball when tested in ice water. When tested by thermometer it should not register more than 234 degrees F. Partially cool, add the nuts and stir until it begins to thicken. Pour out on a buttered platter and cut in squares when cold.

GOLD NUGGETS.

1 lb. peeled and sliced pumpkin	2 tablespoons honey
$\frac{3}{4}$ lb. granulated sugar	$\frac{1}{2}$ lemon sliced

1 oz. ginger root (dried)

Cover the pumpkin with the sugar and let stand over night. Drain from the syrup which will form and boil the syrup down until it is thick enough to coat a spoon. Add the pumpkin, the honey, lemon, and ginger and simmer until the pumpkin is clear and most of the syrup has been absorbed. Do not cook too long, as the product will darken and a caramel flavor develop. Drain and dry the pumpkin on a plate several hours and then roll in granulated sugar. Cinnamon bark may be substituted for the ginger root.

HONEY NUT SUNDAE.

1 quart vanilla or chocolate ice cream	1 cup honey
Put an ice cream dipper of ice cream in a dessert glass, pour honey over it, and sprinkle with the nuts, coarsely chopped.	

ORANGE CREAM (To serve twelve)

2 tablespoons granulated gelatine ($\frac{1}{2}$ box)	1 cup granulated sugar
1 cup cold water	Juice of 6 oranges
2 cups boiling water	Juice of 1 lemon

ORANGE CREAM (To serve six)

1 tablespoon granulated gelatine	$\frac{1}{2}$ cup granulated sugar
$\frac{1}{2}$ cup cold water	Juice of $\frac{1}{2}$ lemon
1 cup boiling water	$\frac{1}{2}$ cup heavy cream

Soak the gelatine ten minutes in the cold water and then add the boiling water, stirring well. When the gelatine is thoroughly dissolved add the sugar and when partially cooled the fruit juices, which have been strained to remove any fibrous parts. Put in a cold place and when jellied fold in the cream which has been whipped. Mix it in such a way that bits of the clear, golden jelly show thru the cream. If the jelly seems sour before mixing in the cream, add a little pulverized sugar to the cream before folding it in. Chill thoroughly and serve instead of ice cream. This is also delicious if partially frozen by putting outside when the weather is below freezing.

HERMITS.

$\frac{1}{2}$ cup brown sugar	$\frac{3}{4}$ cup chopped raisins
$\frac{1}{2}$ cup shortening	$\frac{1}{4}$ cup chopped citron
$\frac{1}{2}$ cup honey	$\frac{1}{4}$ teaspoon salt
2 well-beaten eggs	$\frac{1}{4}$ teaspoon nutmeg
3 or more cups flour	$\frac{1}{4}$ teaspoon ground cloves
$\frac{1}{2}$ teaspoon soda	$\frac{1}{2}$ teaspoon cinnamon

Cream the shortening, working in the sugar gradually and then the honey. Add the eggs, the fruit, and then the flour in which the other dry ingredients have been mixed and sifted. Let the dough stand in a cold place for an hour or more and then roll out and cut with a cookie cutter and bake on a well-greased cookie sheet in a moderate oven. More flour may be added, if necessary to roll, but chilling the dough enables one to roll it with less flour. If preferred the dough may be dropped from the tip of a teaspoon and patted into shape on the baking sheet. One-half cup chopped nuts may be substituted for the citron.

APPLE SAUCE CAKE.

$\frac{1}{2}$ cup shortening	1 teaspoon cinnamon
1 cup sugar	$\frac{1}{4}$ teaspoon ground cloves
1 cup sour apple sauce	
2 cups sifted flour	$\frac{1}{4}$ teaspoon salt
1 teaspoon soda	1 teaspoon baking powder
$\frac{3}{4}$ cup raisins, cut small	
$\frac{1}{2}$ cup chopped nuts	

Cream the shortening and work in the sugar gradually, beat in about $\frac{1}{4}$ of the apple sauce and then $\frac{1}{4}$ of the flour, which has been sifted with the other dry ingredients, and beat smooth, continuing to add them alternately until all are in, and then add the fruit, and nuts which have been lightly floured. The batter should be a trifle stiffer than an ordinary cake batter, and if the apple sauce is very juicy a little more flour should be added. Bake in a shallow loaf pan in a moderate oven.

(All measurements level.)

A FEW miles north of Tennessee, in Todd County, Kentucky, where for miles one sees great fields of the peculiar green of the tobacco plant, and acre after acre of wheat, there lives a prosperous farmer who has for years successfully raised both of these crops. He is Porter C. Ward of Allensville, Ky. His brother, Dr. J. S. Ward, lives in Nashville.

One summer 13 or 14 years ago, Mrs. Porter Ward went to Nashville for a visit. When she returned home she reported that the doctor-brother had bought some bees (he later became Tennessee State Apiarist). Porter Ward was disgusted. "That's a fine way to fool away a man's time," he remarked. "And the crazy fellow's going to get stung to death, too," he prophesied amiably.

For several months nothing more was heard about the new interest. Then in the fall the Doctor came up to a little near-by town to see about getting some bees he had bought, and he spent a night on the way with his brother. Porter Ward was sick in bed, but the Doctor, all enthusiasm, started talking about his new sideline. The sick man lay in bed, grunting his disgust. The Doctor sat by his side, talking bees. Presently Porter Ward became interested—more interested—and finally got up out of bed. The next morning he went with his brother to the little near-by town. *And he bought those bees himself!* Recovered from his sickness, he had contracted the "bee fever"—incurably!

He had never been near bees before and knew nothing about them except what the doctor-brother had poured forth that evening. Promptly he got books and journals. Then he moved his newly acquired bees home—and bought two more colonies.

After that start he increased steadily till he had 75 colonies. Then along came European foul brood. He was ruined as a beekeeper, of that he was sure. But he cared too much about those bees to give them up. So he went to work. Unfortunately he made a bad mistake, and treated them all as for American foul brood—shaking the bees, burning out hive-bodies and destroying combs—the pitiful waste of it. And the bees just built new comb and went on calmly having foul brood. At last he read what Mr. Alexander had done and he did likewise—killed his queens, left the bees queenless a short time and introduced young Italian queens. The disease disappeared. Nor has there been a sign of it for several years now.

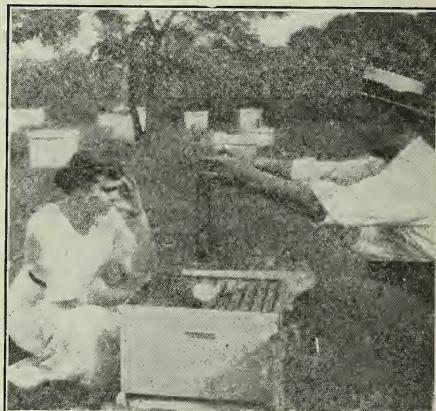
To this foul brood experience had somewhat dampened his ardor, yet after getting cleaned up and all in good shape, he began

Beekeeping as a Side Line

Grace Allen

increasing again, as fast as the farm work would permit. And he now has about 200 colonies, in eight yards—some yards being small because just started. They'll grow. Already indeed, the bee business has outgrown the time he can give it. So now he is planning to give up his regular farming, as soon as he can shape the change, and make beekeeping his main work. He has found the beekeeping more profitable as well as more pleasant. How little they could foresee such a result that summer day when his wife told him about the Doctor's bees and he called him a crazy fellow fooling away his time!

Tho he has usually had two fair surplus-producing flows, he does not consider his location good enough for a specialist. The flows are not dependable enough. There is no fruit bloom near. A little crimson clover and some white clover generally give a surplus. The fall flow is chiefly boneset, some



Porter C. Ward, Allensville, Ky., showing his large hive.

smartweed, and aster. Formerly, he says, the aster never failed, but the last few years it has not been a sure yielder. As for sweet clover, it is growing in favor with the farmers around, yet as a honey producer it has not so far come up to expectations. The bees work it but seem to get very little nectar. But it needs lots of lime, and he himself has already limed practically all his 260 acres, for quite aside from its value for nectar, he prefers it above all other clovers in his farm rotation, and is increasing his own acreage constantly. Perhaps the more lime and greater acreage will make the honey-producing results show up better.

Like many others, Mr. Ward started with 8-frame hives because that was what he first bought. Later he changed completely

into 10-frame hives. Even these didn't quite satisfy him. So when he heard Mr. Dadant on big hives, at the Tennessee Convention two or three years ago, he was greatly impressed. The reasoning, the conclusions, and the experience—the experience especially—struck this busy progressive farmer-beekeeper forcibly. "I went home from that convention," he says, "a big-hive man. And I dug up and read every thing I could find on the subject."

The next summer he got a few square Jumbo hives from The A. I. Root Company, and he liked them better than anything yet tried. A trip to Hamilton, Ill., that fall, with a visit to the Dadant apiaries, completed his conversion. Since then he has kept on changing till now 70 colonies are in the big hives. "I hope to have all the balance transferred by another fall," he says. "There is no question in my mind but that these big hives very much reduce labor. Lots of room, 1½-inch spacing, good worker combs, young queens, and good super room will reduce swarming and labor—no sort of doubt about that."

Being a farmer, with other work crowding him just when the bees do, the reduction of labor is of vital importance. He has his honey-house at the home yard and does all his extracting there, with an 8-frame power-driven extractor. It is interesting that he uses only a one-size container, the 5-pound bucket.

University Professor as Beekeeper.

The head of the Department of Philosophy of Vanderbilt University, Nashville, Tenn., is Dr. Herbert C. Sanborn. When Dr. Sanborn, then in Winchester, Mass., was a mere boy of fifteen, surely knowing little of philosophy and with only vague far-away dreams of future professorships, he somehow acquired a box hive of bees. Two years later he got a copy of A B C and X Y Z of Bee Culture, an experience which is always, to beginners, like the opening of their eyes to puppies! Promptly he procured a proper kind of hive, transferred his bees, sent to The A. I. Root Company for a new queen and became what a boy would call "a beekeeper right." Thruout his high school years he kept 8 or 9 colonies. And then he left his bees with his father while he went away to college—taking his Ph.B. at Boston University and his A.M. at Tufts College—and then, following the trail

of the scholarly youth of that day, went over to Germany: to Heidelberg (how the very name conjures, almost equally, the famous castle, the centuries-old University, solemn learning, drinking songs, and duels!); to Berlin, the center of learning for thousands of students every year; to Munich with its old University and its million-volume library and its once-loved art galleries—ah, the once of Germany and the now, in the hearts of aspiring men! It was at Munich that he took his Doctor's degree, *magna cum laude*.

In all his little trips thruout those years, he was constantly looking up German beekeepers, and when he went over into Italy he hunted out Italian beekeepers. So the flame was kept alive. And at last he came back home and went to teaching, first modern languages and later philosophy. It was in Chestertown, Md., that some beekeeper told him about a swarm of bees that had



Dr. Herbert Sanborn, head of the Department of Philosophy, Vanderbilt University, gets his recreation by working among his bees.

settled near his home. Dr. Sanborn captured it, and again he was with bees, the sideline delight of his boyhood. Soon he had a dozen colonies, and in the fall of 1911, when he accepted a professorship at Vanderbilt, he put them in a freight car and shipped them to Nashville.

The next year, 1912, he imported some queens from Anthony Biagny of Bellinzona, Italy—copper-colored queens from the Italian lakes. And the next year, 1913, one of these queens produced 350 pounds of comb honey. To be sure, 1913 was the big year. Yet at that, 350 pounds was a record-breaker for middle Tennessee. And the next year, 1914, when the season registered a complete failure, a daughter of this queen produced 100 pounds. All his recent efforts to reach Anthony Biagny have proved unavailing.

"It is far more interesting than golf," he declares, "and after spending the afternoon here with my bees—and my dogs and vegetables and roses—I go back to school in the morning refreshed in mind and body, ready and eager for work."



FROM NORTH, EAST, WEST AND SOUTH



In Southern California.—There has been only a light shower since the rain of a month ago, and the grass, that had grown three or four inches high, is now drying up for want of moisture. Just what effect this will have on the honey plants, if we do not get more rain soon, is hard to conjecture. Of course, the ground does not dry out nearly so rapidly as during the spring and summer when the days are long and hot, yet a good soaking rain now would be a great assurance toward a honey crop for 1922.

Beekeepers' meetings will be in order during the coming months. Perhaps the one of most importance to southern California will be a short course in beekeeping to be given by the College of Agriculture of the University of California. The meetings will be held in Exposition Park, Los Angeles, Dec. 5-10, under the auspices of the Farm Bureau. Dr. E. F. Phillips, Geo. S. Demuth, and Geo. A. Coleman are among those who will take part on the program. It is to be hoped that a large number of beekeepers will be in attendance, for much useful information is always to be had at these meetings. When the State and National authorities are not only willing but anxious to help the beekeepers, surely it is not asking too much when we urge the beekeepers to attend these lectures and demonstrations. Many apiarists are always too busy to go to meetings and very often they are the very ones who do not make the greatest success of the business for the reason that they do not keep up with the times. This is to be an advanced course of instruction for commercial beekeepers, and almost every topic of interest to this class of apiarists will be touched upon.

We are finding that we must produce our honey at a lower cost in order to meet the declining prices of our products. By exchanging ideas we are enabled to get information that may help us to do this. What better place to discuss these matters than at the splendid meetings to be held in Los Angeles Dec. 5-10?

There is some inquiry every few days for bees. From eight to ten and twelve dollars per colony is being asked, according to equipment, amount of stores, etc. More beekeepers now than in former years seem to be satisfied to continue in the business when short crops come. As one man put it a few days ago, we had the high prices during the war, and many of us acquired some very extravagant habits at the same time. This, together with the fact that we must accept lower prices for our honey, may work a hardship on some.

The Southern California Fair has come and gone, and as usual the Beekeepers' Clubs of Riverside, San Bernardino, and Or-

ange Counties furnished one of the main attractions. Waffles and honey were served free in the Riverside booth and proved to be very attractive. San Bernardino County succeeded in carrying off the first prize this year, Riverside County getting second and Orange County third prize.

A meeting of beekeepers was held in Los Angeles on Nov. 4 and 5. It was well attended by apiarists from southern California counties. T. O. Andrews of Corona called the meeting to order and presided until the following officers were elected: Frank Buchanan, president; Geo. Emerson, first vice-president; J. W. George, second vice-president; A. B. Shaffner, secretary.

M. H. Mendleson gave a valuable talk on "Comb Honey," and Frank Buchanan gave a very good paper on "The Moving of Bees."

The forest ranger from the Los Angeles National Forest signified his willingness to co-operate with beekeepers and assist them in getting locations on forest reserve lands. All small tracts of any value as agricultural lands are usually owned by private parties. Yet there are some locations on the reserve that would be quite valuable and they could be reached by building roads.

The various Los Angeles supply houses had offered supplies to the value of \$50 to the person suggesting a name that would be suitable for this new organization, but up to a late hour the committee was still struggling with the problem. L. L. Andrews.

Corona, Calif.

* * *

In Arizona.—The 1921 honey crop in the southern Arizona region is much below the average in quantity. The preceding winter was one of unusual drouth, and there was practically no spring nectar flow for building up the colonies. This condition was in marked contrast to the spring of 1920, when a fine flow from a variety of wild flowers brought the colonies to maximum size in ample time for the May mesquite-catsclaw flow. When the period of this flow came in 1921 the majority of colonies were not in the best of condition to take advantage of it, altho the flow was fair in quantity. Following the dry winter and spring the July-August rainy season was one of exceptional rainfall, the precipitation at Tucson amounting to 6.24 inches for July alone. August was also exceptional over the State in general. I anticipated a heavy second blooming of mesquite and catsclaw as a result of the favorable rains, but learned a lesson I shall not soon forget, viz., that superabundant moisture induces heavy vegetative growth with a minimum of reproductive activity. Contrary, then, to my expectations of a heavy flow, these trees



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scarcely blossomed at all during the period when second bloom may generally be expected, and there has been a dearth of nectar thruout the season since the May-June honey flow.

The same small apiary (nine colonies) at the University of Arizona, which last year produced more than 1000 pounds of honey, this year has produced barely 500 pounds. If any apiary in this section has produced more than 50 or 60 pounds per colony it is exceptional, while many beekeepers have secured almost no surplus.

In driving several times over a territory some 50 to 60 miles in extent during the rainy season it was noted that hardly more than one mesquite tree in fifty bloomed, while catclaw bloom was a decided rarity. Such scattering mesquites as blossomed did so at irregular intervals and not at any one time, giving rise to the statement heard from some beekeepers that this plant bloomed three or four times. It is safe to say, however, that no one tree blossomed more than once in the summer season and most of them not at all.

One beekeeper has reported a satisfactory fall flow at his location, from an undetermined small flower. This must have been rather exceptional. Desert bloom (*Baccharis sarathroides*) has bloomed heavily, a little earlier than usual, but, in the vicinity of the University apiary at least, produced very little nectar.

Owing to the conditions outlined above, it is probable that many colonies are entering the winter period without adequate stores, and beekeepers will need to keep careful watch with a view to feeding when necessary.

Comb honey of fair to good quality is selling locally at 25c to 35c per section, and light amber and amber extracted is retailing at 55c per quart. Chas. T. Vorhies.

Tucson, Ariz.

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In Texas.—The weather during October has been nearly ideal for bees over almost all Texas. The rains of September induced a blooming of many fall plants, and honey flows were experienced all over the State. No frosts have occurred as yet heavy enough to hurt even the cotton. As late as October 20 honey was still being stored as far north as Paris. In the southern portion the flow from como has just started. From west-central Texas comes a report of a good surplus from goldenrod and sumac. It is the general opinion that the bees are going into the winter in better shape than for years. As the price of honey was low, many Demuth feeders were left on the colonies. The honey plants are in fine shape. Broomweed gave its usual flow, and horsemint is coming in quantities sufficient to insure a blooming next spring.

In the eastern part of the State boneset and asters were the origin of a good fall crop.

The depression of prices has had a queer effect on the bee game. Many of the men who for the past five years have made money on bees are discouraged because of the low price of honey and would quit if they could find a buyer for their bees. On the other hand, the old-timers are buying bees, and the farmers are turning to beekeeping as never before. For the first time the farmers of the South have realized that they must raise their own food, and a colony of bees gives as quick and large returns as anything they can have.

Competition occurs among all forms of life. Last year Dr. Merrill of Kansas gave a very interesting account of the loss of a honey crop because of the prevalence of flies on sweet clover. Thrips on alfalfa and mesquite often ruin a honey flow, and here in Texas a horsemint flow is often ruined by a yellow and black beetle which infests that plant. During the first part of this month a peculiar example of this occurred. This was not of much importance but was very interesting. A migration of the southern snout butterfly occurred across south Texas. Millions of these butterflies migrated from the Big Bend section of Mexico across Texas and out into the Gulf. Rockbrush was in bloom and the insects fed on it. Not only was every single flower occupied but the leaves and often the branches were covered with these highly colored butterflies. The bees seemed at a loss to know what to do, and it was amusing to see several bees trying to visit a flower and yet apparently afraid to do so because of the butterflies.

The apiary exhibit at the State Fair at Dallas, Oct. 8-23, attracted much attention. T. W. Burleson and W. K. Few of Waxahachie had very large exhibits. The entries for honey, wax, bees, cookery with honey, and displays were large.

The Texas Honey Producers' Association had a display exhibit, which was not entered for premiums. A large pyramid of bees appropriately lettered attracted much attention. This lettering was the work of C. C. Bee, who is a marble-cutter as well as a beekeeper.

Local fairs at Paris, Floresville, Kenedy, Belton, Manchester, and Seguin have had fine bee exhibits. The interest in beekeeping seems to be on the increase in spite of the low price of honey. This is especially true of western Texas, where sweet clover is being sown on irrigated land.

San Antonio.

* * *

H. B. Parks.

In Mississippi.—The Yazoo and Mississippi Delta is a strip of alluvial land in Mississippi which extends along the great river between Memphis and Vicksburg and which has an aver-



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age width of nearly 40 miles. According to the State Soil Survey, this land is exceeded in fertility only by that of the Nile River Valley. A few months back much of this land sold for over \$500 an acre. Cotton is the main crop, and blacks predominate over the whites four to one.

For many years commercial honey production has been successfully carried on here. Writing for Gleanings in one of the latter years of the last century, Dr. Blanton of Greenville, Miss., referred to this wonderful section as a beekeepers' paradise. Extracted honey is produced, and until recently honey was shipped in barrels to St. Louis, Kansas City, and New Orleans. Cheap labor and large yields of honey made five cents a satisfactory price until the change in affairs was brought about by the World War.

During the war that five-cent honey sold from 17 to 22 cents. The big slump in business came in October, 1920. Honey, above all other crops, suffered because honey borders on luxury. The five-cent honey again became five-cent honey and was slow in moving even at that price. To make matters worse, both American foul brood and European foul brood had seriously reduced the average per colony yield. The beekeeper was up against a problem, for like the returned soldier who would not take back his old job at his former wage, the beekeeper was unwilling to accept the old price of honey.

The situation was ripe for organization. All the beekeepers in the Mississippi Delta, contiguous counties, and river counties south were invited to come to a meeting at Greenville on February 12. A large and representative crowd of beekeepers turned out. Those promoting the organization had prepared a constitution and by-laws that, with a few minor changes, were accepted. Officers were elected, dues paid, and a membership campaign launched. The Association pledged by a unanimous vote to assist the State Plant Board in their foul brood eradication campaign which was soon to begin.

Six weeks later another meeting was held at which a purchase and sales program was arranged. Dealers in beekeepers' supplies were present who agreed to allow liberal discounts to association members. The cooperative selling of honey was planned. A central bottling establishment was deemed impractical, and the members decided to operate individual bottling plants. It was agreed to adopt an association label. A four-ounce sample of each kind of honey extracted to be sold under the association label was to be filed with the secretary and approved by him before shipping. Each bottle was to contain a packer's pasteur on which each member was to place his number so that any honey could readily be

traced to its producer. All honey was to be heated to 160° F. before bottling.

This association, like all kindred organizations, has had its knocks and bumps, delays and misunderstandings, and it was only by the utmost effort on the part of its officers that it was able to get ready to make its bow to the public at the Tri-State Fair at Memphis the last week in September. When they received their invitation from this Fair Association, including \$150 for expenses and the privilege of selling honey on the grounds, their label was still at the engraver's and somewhere en route was a car of bottles. But they did get the stuff to Memphis and they put on a beautiful honey show. Incidentally, Delta Pure Southern Honey was introduced to over 1000 Memphis homes. As a result of this exhibit a chain grocery company made an initial purchase for the shelves of each of their stores, and one broker insisted that he be given the business of selling the Delta brand.

So these beekeepers have made a good beginning. They have their heating tanks, their floating thermometers, their labels, and packer's pasters, and they are ready for big business. At a recent meeting the Executive Committee elected to a levy a tax of $\frac{1}{4}$ cent a pound on all association honey, which sum will be used for follow-up advertising in the Memphis territory. Things may be slow at first and perhaps discouraging, but these beekeepers believe in themselves and the fine flavor of their amber honey, so that it looks as tho the old five-cent honey, all dressed up and having a new place to go to, is going to bring the desired results.

R. B. Willson.

Agricultural College, Miss.

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In New York.—The season's rainfall has been in streaks and spots, some localities getting plenty and others almost none. The lowlands of Lake Ontario suffered the worst drouth that can be remembered by even the oldest residents, with practically no rain from May until October. Orchards and well-cultivated crops showed but little injury, while uncultivated crops, such as oats, were a total failure. Clover, which was none too promising to begin with, made a feeble attempt at blooming and dried up without yielding any nectar at all, and was all cut and harvested early in June, a month earlier than usual.

There are a good many large apiaries, including a large percentage of our own holdings, located in this dry territory, which have yielded no surplus at all, and in the majority of cases feeding has been resorted to to supply the required amount of stores for winter. Some yards have done well on fall plants, such as goldenrod and asters, but in some localities these plants were entirely destroyed by the grasshoppers which


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appeared in great numbers, devouring everything that was at all green, even stripping wild carrot, and in some cases the leaves from trees. I saw one field of buckwheat with every plant eaten off, the remaining stubs sticking up over the field like so many little sticks.

Where these conditions prevailed brood-rearing was at a low ebb all summer and ceased entirely the latter part of September or very early in October, and the colonies are going into winter light in young bees. Where not fed, they are light in stores also, and in some cases with considerable honeydew from oak trees. If the winter proves to be severe there will undoubtedly be heavy losses. With clover practically annihilated by the drouth, beekeeping prospects are none too good for next year.

In contrast with these conditions, on the highlands above the Niagara Escarpment and thru parts of southern and eastern New York rains were more frequent, with consequent better beekeeping results and in many instances record-breaking yields. Here the condition of clover and other honey plants was never more promising for another season.

To illustrate how these extremes exist, one of our own yards yielded an average surplus of 150 pounds, while another yard only five miles distant had to be fed the entire season. On the whole the honey crop in New York will probably average above 50 per cent, and where marketed to good advantage will compare favorably with most agricultural products. H. M. Myers.

Ransomville, N. Y.

* * *

In Southern Indiana.—The season just closed has been very peculiar, in that it was one of great promise but small realization. It opened up fine, nice weather, so that the bees built up on the pear and apple blossoms. The fact that a freeze came later and killed practically all pears and apples did not matter to the bees, for their harvest was over.

In the early part of the season there was just the right amount of rain for all growing crops. The sweet clover blossomed in profusion, and there never was a finer outlook for fall flowers, especially smartweed; but after the bees were nicely at work on the sweet clover the rains quit and hot weather set in. The last of June the mercury ran up to 100 degrees and continued thru July, running from 95 to 103 degrees. The sweet clover was consequently cut short and the smartweed put out of commission. While the acreage of blue vine, or dry-weather vine as it is called, is not great, yet it seemed to enjoy this hot dry weather and gave a light but steady flow thru July and August. Extra-strong colonies stored some

surplus, but colonies of medium strength built up into good, strong colonies thru it.

The failure of the fall flow left these colonies powerful in bees but light in honey. Many who did not feed will lose a large part of their colonies. However, colonies in large hives filled up on the sweet clover flow and are going into winter quarters strong in bees and stores.

Along the lower Wabash and the Ohio Rivers good crops are reported from the blue vine. This plant is not appreciated by many beekeepers as it should be, as in many seasons it yields just enough to keep up brood-rearing and to furnish a living for the bees. Consequently, as the honey does not appear in the super, many think they are getting no flow from it. If it were not for this plant, many colonies would consume all of their stores in the summer and curtail brood-rearing, so that if there was a flow from smartweed, the colonies would not be in condition to gather it.

When blue vine is left to mature in its own way, it blossoms in June. This year fully developed seed pods were found on the fourth of July. However, the main honey flow from this vine is in August. The reason this flow comes late is due to the fact that most of it grows in the cornfields. When the corn is cultivated the plant is cut off, yet it comes again and is again cut off; but when the corn gets too tall for cultivation, the blue vine has a chance and fairly takes the field. In this way the blooming period is retarded and prolonged, as some does not get cut off at all and some is missed at the second cultivation. It is a perennial, and when a root once gets established it is there for keeps. Jay Smith.

Vincennes, Ind.

* * *

In Wisconsin.—One man produced 18,000 pounds of honey. He advertised it in his local paper at 12½c a pound and sold his entire crop in a very short time. Needless to say he does not belong to any association. A few other still larger producers are selling to the consumer 1 pound or 100 pounds at 15c a lb. They also act as independent individuals. Association members for 30 miles around these men have in the past asked from three to five cents a pound more. Association members found that many of their former customers autoed 30 miles to buy their honey from these men. The larger producers who were association members had honey to sell nearly the whole year at the higher prices. They found that year after year the natural demand for honey was seasonal the same as the fruits and vegetables have their seasons and a natural demand for them in season. After the season the demand could not be improved very much even with advertis-



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ing, because the majority of the consumers buy enough in season to last them as long as they want it or until the next season. Right down in the bottom of his heart nearly every honey producer, large or small, is desirous of having his entire crop of honey sold before Christmas.

Co-operative unions are accused of being or becoming selfish and of taking all the traffic will bear for the necessities of life. The producers who are independent of organized groups of producers have to a large extent established honey prices this season, except that association members ask 20% more in less than 5-gallon orders. This, of course, is competition in prices. We may be safe in saying that these prices were established without actually knowing the cost of production and distribution. The very small and the very large producers can and ought to produce honey cheaper than the middle-sized producer.

With half a crop locally here and a price of 15¢ in 5-gallon lots and 18¢ in smaller lots, all of our association members will be sold out before Christmas. The demand was extra good. The price was not too high. Those men who asked less than we did are just that much out. It would have paid them hundreds of dollars to be members of an association, and they would not be obliged to be feel guilty of holding up the consumer with too high a price. Every association needs the aid of these men who refuse to come in just as much as they need the aid of the association. These men should help build up the associations and help guide them in their policies and in the adjustment of prices that are just and fair to both the producer and consumer.

Greenville, Wis. Edw. Hassinger, Jr.

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In North Carolina.—President Bruce Anderson and his board of directors have called the North Carolina State Beekeepers' Association to meet in annual session at the North Carolina State College of Agriculture and Engineering on Tuesday, Jan. 10, the convention to continue thru Wednesday, Jan. 11. The college has a model apiary maintained under the direction of J. E. Eckert, instructor in apiculture, and is also accumulating a valuable and very instructive collection of the latest and best things in beekeepers' supplies. With this excellent apiary and "Museum of Apiculture" at hand the officers of the State Association of beekeepers believe that Raleigh will prove an especially advantageous place for this annual convention.

One of the special matters to come up in this convention will be the changing of the constitutional time for these annual meetings from the second Tuesday in January to

August so that the meetings can be included in a national chain or series of State conventions being scheduled under the auspices of the American Honey Producers' League. This would, under a tentative schedule already prepared, give the North Carolina Association a convention August 9 and 10, 1922. There is a very general sentiment to make this change, as it will then be possible to have speakers of national and international reputation for the State conventions, not otherwise easily obtainable.

Rapid development in beekeeping in this State is indicated by the fact that in spite of almost the leanest honey year in the history of the State, the Bees and Honey division of the State Fair at Raleigh was characterized by fine exhibits constituting displays many times more extensive and meritorious than ever before gotten together in this State.

Reports from practically all sections of the State where beekeeping has any foothold indicate that bees are entering the winter season in much better condition than was expected after the early frosts and the fall droughts so terribly reduced the honey crops for the season. However, feeding is necessary in some quarters, and beekeepers generally are giving exceptionally careful attention to this important matter. Many beekeepers, especially in the northeastern section of the State, report considerable commercial honey crops from the fall flora such as goldenrod, wild aster, and others. In the Piedmont, or central part of the State, while these flowers were very profuse, the dry weather greatly reduced the flow of nectar, in many instances bees being found in an actually starving condition in the midst of an abundance of such flora.

Wilmington, N. C.

W. J. Martin.

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In Ontario.—Following a month of weather milder than usual for this time of the year, November has come in with a wintry aspect, and today (Nov. 10) the ground is covered with a snowy mantle. For the first time in our beekeeping experience we have been caught by cold weather before the bees were all prepared for winter so far as packing is concerned.

We had nearly 300 new winter cases made to accommodate a lot of bees hitherto wintered inside, and delay in getting the cases, coupled with more than the ordinary amount of fall work, kept us later than usual. Then the early cold weather and heavy fall of snow came as a climax, and found us with some 150 colonies still minus the planer shavings needed for top packing.

Fortunately all hives had been placed in cases, and the sides and ends all packed before the snow came, but it is bad enough



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as it is. Today we took a truck-load of shavings to the apiary not yet entirely packed—a drive of nine miles—and when we got there we found a deep cut in the road where we go in to the place, all filled up with snow—too much snow in fact to shovel out in time to attend to work and get home before dark. So another road had to be made across a field after opening up two fences. Fortunately teams were working near the place and I was able to get the driver of one of them to hitch on the front of our truck and give us a haul of about 40 rods up to the apiary. But working in snow packing the bees is not to my taste, and I say, "never again." Wet feet, cold hands, and other unpleasant features accompany the work under such conditions, not to mention anything about the bees which would be better left alone without the disturbance that is caused, no matter how careful we are in taking off covers of winter cases and putting in packing.

The demand for honey still surpasses anything we ever had in this part of the country before. Two stores that each bought from us a carload of honey, which was delivered in September, have already asked us for more honey like the previous order, and we were, of course, unable to supply them. No doubt they will be able to get honey all right, but I simply mention this to show what heavy sales the retail stores have made, not to mention the honey sold direct to consumers by the beekeepers. Bees that are to be wintered inside here in Ontario, as I have already intimated, are covered up with snow at the date of writing. We will have only 65 colonies in the cellar this winter; so, with only 5% of our bees inside, naturally we will be more concerned as to conditions which affect outside wintered bees this season.

J. L. Byer.

Markham, Ont.

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In Porto Rico.—To understand the varied conditions existing in Porto Rico, it is necessary to have a bird's-eye view of the entire island, which is a part of the chain of islands which reach out in a southeasterly direction from Florida, known as the West Indies Islands. It is only about 100 miles long and 30 miles wide. Most of the coast line is flat. This flat land varies from a quarter of a mile to about a mile in width. All the remainder is composed of high hills, one of which reaches an altitude of over 4,000 feet above sea level. These hills roughly divide the island into a north and south watershed. The north side receives an average rainfall of from 70 to 100 inches annually, while the south side seldom receives one-third of this amount.

The small island has, therefore, many different aspects—wet and dry, plains, high-

lands, and deep valleys. Within a distance of less than five miles one can frequently find lush verdant vegetation and ground that is sunburnt until all vegetation seems dead—trees without leaves, and grass and small shrubs burnt dry and brown. When sufficient rain falls to renew life, then it comes jumping with incredible swiftness. A week later all is green, with trees in leaf and flowers budding. With these varied conditions from month to month, and year to year (as there is no sure rainy season), it can readily be seen that at a given time what will apply to the north coast will not apply to the south coast and what will apply to the hill country will apply to neither. In this respect there is a similarity between California and Porto Rico, despite the enormous difference in amount of territory.

With these varied growing conditions, the blossoming period is not alike all over the island at a given time. It would be correct to say there is a constant bloom of nectar-yielding trees on the island. When this localized bloom is over, another part of the island takes up the work, and so it goes from month to month.

Owing to the hilly contour of the ground, it frequently happens that two apiaries may be within a mile of each other, and yet the bees from the two yards in their flight will not lap over the same territory. This condition is caused by the high-wooded hills, and no doubt the trade winds play their part in limiting the flight. The bees work up and down the valley in which they are located and range near the summit of the hills, but seldom go over the top.

When Porto Rico was taken from Spain in 1908, there were practically no honeybees or beekeepers to be found. About 1909 the Mayaguez Experimental Station, supported by the U. S. Department of Agriculture, introduced the Italian bees and the modern 10-frame hive. Five years later there were several thousand colonies of bees on the island in modern hives, most of these being owned and operated by the native Porto Ricans. During the latter part of the World War, the honey produced was sold for as high as \$2.00 per gallon. These high prices so stimulated the sale and increase of bees that today many parts of the island contain so many colonies that no honey is being stored and quite a few apiaries are at the point of starvation much of the time. These conditions give little promise of large yields or prosperous beekeeping. It is to be hoped in the future there will be an equalization of bees to the possible honey production. This will allow a maximum production of honey, but will probably cut down the number of colonies by a third.

Aibonito, Porto Rico. Penn G. Snyder.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Beekeeping on Cape Cod. It is remarkable in what curious and unexpected places one finds bees and beekeepers. Having heard of Cape Cod as being a succession of sand dunes, especially at the outer extremity, I had not expected to find any bees at Provincetown, the first landing place of the Mayflower in 1620. Soon after my arrival from Boston, on the Dorothy Bradford, July 25, I walked down a little lane between buildings, to the water front. It was lined on each side with old-fashioned flowers, in which the hollyhock was conspicuous. The Provincetown people believe in flowers, which add much to the beauty of the quaint old place with its narrow streets and old cottages. At the end of my walk I noticed a little patch of sweet clover in bloom. A large number of insects were busy on the blossoms, and I looked carefully for honeybees. Sure enough, there were several fairly well-marked hybrids. I lost no time in making inquiry as to who kept bees. I soon located John F. Francis, a heavy-set genial fellow, who has a barber shop on Main street. It did not require a long time for us to become acquainted, and thru Mr. Francis I was able to learn about the beekeeping possibilities of that part of Cape Cod. Mr. Francis keeps only a dozen colonies, as he thinks that number is about as many as the field would profitably support. Even with that small number, he keeps a "Honey for Sale" sign in his window. At one time his sign read "Honey in the Comb"; but as a comb is used in the

barber trade, the sign attracted the attention of some hunter of the curious in signs, and was written up in the Boston papers.

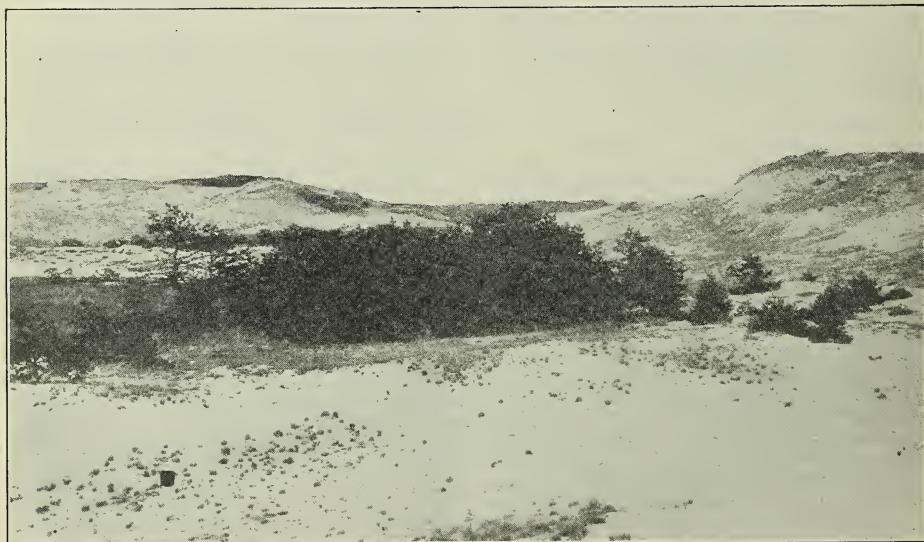
These sand dunes are covered in many places with a heavy growth, including oak, jack pine, cherry, soft maple, beach plum, grapes, huckleberries, blueberries, and other undergrowth. The honey source was stated to be as follows: beach plum, wild cherry, cranberries, blackberries, sumac, and, in the fall, much goldenrod. Is it not remarkable that beekeeping is so widely spread in our country? The question is not where can bees be kept, but where are the places in which they can not be kept?

Provincetown, Mass. Harry Lathrop.



Sumac Bobs For Smoker Fuel. Sumac bobs are cheap, easy to get if you live where they grow, and make more smoke to the pound than anything on earth ever put in a smoker. They last longer and never flame up. Puff as hard as you please, and all you get is a cloud of white cool smoke less the bad smell that you get with rags or many other things that beekeepers usually use. Every beekeeper that has seen them burn says they beat anything else he ever saw. One of the inspectors now carries a bagful along for smoker fuel. Just plain sumac bobs, the seed of the sumac, last year's tops, are the part to use. John N. DeMuth.

Pembroke, N. Y.



Sand dunes on Cape Cod, near Provincetown, the first landing place of the Mayflower in 1620. Even here the honeybees are able to make a living.

Seven Supers of Honey from Fall Flowers.

This season has been a very prosperous one in this locality except that the swarming was late, principally in the latter part of June and continuing to the middle of July and even as late as September. I had one colony start swarming on September 2nd. It filled its 10-frame hive by the 14th of September and started in the super. We had an unusual fall crop from smartweed and aster. Some of the fields were white and blue with aster. I never saw so much before and it seems to be increasing every year. There was also an abundance of goldenrod, but the bees of this county don't seem to work on it very much. I had one colony that gave me over seven supers of fall bloom honey which is light colored and fine. My bees are all going into winter quarters heavy in stores.

Julian, Pa.

W. S. Williams.

Beekeeping in the City of Rome.

I find here among my papers the address of a prominent Roman bee-keeper, who has an apiary on top of a five-story building in the center of Rome. Large potted lemon and orange trees provide shade and act as swarm-catchers. On the floor below he has a large laboratory where he makes experiments for the government. The walls are hung with hundreds of medals and diplomas from all the prominent cities in Europe. I spent a most pleasant day with him, conversing in broken Italian on my part and broken English on his. His name is Cav. Prof. Antonia Costantini, Dиректор del R. Osservatorio di Apicoltura, Rome, Italy.

I was directed to him thru the Italian Minister of Agriculture on my return from the Balkans in 1918. He lives on the fourth floor of a mediaeval building on one of the most busy and crowded streets of Rome.

After I introduced myself, the good man became intensely interested to learn the latest developments in American beekeeping. I had a most pleasant chat with him in my broken Italian. Mr. Costantini is a most remarkable man of about 55 years of age. His modesty restrained him from talking about himself, but the walls of his office gave evidence of great bee activities in his past years. All the available space on his walls was taken up with diplomas, gold, silver, and bronze medals from all over the world, including one from the Exposition in Chicago; also ribbons and badges from beekeepers' societies, and several orders.

A small staircase leads from his office to the roof of the building where he kept an apiary of about 70 colonies. The size of the roof was about 75 x 150 feet, surrounded on all sides by a wall about four feet high. The apiary is divided by streets and avenues into

several blocks. In the midst of each block grows a fair-sized orange tree in a tub. There is also an alley of orange trees and lemon trees along the four walls, furnishing abundant shade for the apiary. The bee-hives are arranged symmetrically in each block with a space between filled with potted plants, such as almonds, fig trees or shrubs, bay trees, palms, etc. The hives are placed on low stands just convenient to handle. They are his own make, resembling closely eight-frame Langstroth hives.

His system is modern and up to date, with frames all wired horizontally and vertically. The bees are the dark leather-colored variety, almost red. They were very gentle, and at the time I was there (October) had a brood-chamber and one super completely filled with brood and honey, altho the honey had been extracted twice during the summer. Mr. Costantini's research work in 1918 was principally along the lines of increased production of honey for the war. His bees have to travel from two to three miles toward the Sabine Hills where they have their principal pasture outside of the rather extensive parks and gardens of the city of Rome.

St. Paul, Minn.

Francis Jager.

Does Pollination Stimulate Growth of Fruit Body?

There is a general belief that the development of seed inside the fruit-body unconditionally influences the development of the fruit-body itself. That this is not so, can be seen from the seedless orange, the seedless tomato, and the banana. In none of these instances are seeds desired, but the development of the fruit-body takes place all the same in consequence of the pollination.

St. Thomas, V. I.

Alex Holst.

Bees as Pets. The term "pets," as applied to bees, has always seemed to me incongruous—"pet" conveying to my mind the idea of something to be fondled and caressed. I have, however, been converted to believe that bees may be pets.

A friend of mine who recently acquired a colony of bees is very enthusiastic over her new acquisition. She is often heard to remark: "I do love my bees." During the very warm weather when the bees clustered out evenings, she would go to the hive and actually pet her bees, passing her hand over the cluster as tho it were the back of a cat (tho, of course, more lightly), and then remark, "Oh, they are so nice and soft!" And this despite the fact that when her bees swarmed she was stung five times on one foot.

Magdalen Sproull.

Freeport, N. Y.

Q—How much of their stores will colonies of normal strength well protected by winter packing cases consume up to the time when brood-rearing first begins in the spring?

Indiana.

Answer.—Colonies which are well protected and supplied with stores of good quality should not use more than 12 to 15 pounds during the broodless period in your locality. If conditions are favorable they should consume less. In fact, strong colonies should be able to live during the broodless period on one and one-half pounds per month. Much depends upon the character of the winter and the quality of the stores. If the stores are of the very best, such as heavy granulated sugar syrup, straight and well-ripened alfalfa or white clover honey, much less will be used than when the stores are not so good. Sometimes the amount used by colonies having the best of stores is less than one-half the amount used by colonies of the same strength but having inferior stores.

SYRUP CRYSTALLIZES IN THE COMB.

Question.—I fed my bees a heavy sugar syrup two parts of sugar to one of water, using tartaric acid in making it, but on looking in the hives I find the syrup has crystallized. What can be done now?

Frank B. Moore.

Missouri.

Answer.—The bees will, no doubt, be able to use this syrup in your climate even tho it is partly crystallized, but in doing so they will waste a part of it by throwing out the hard crystals while digging into the cells to take the liquid portion.

In making the syrup you probably did not keep it hot long enough after adding the acid. Since the acid can act on the sugar only when heat is applied, it is necessary to keep the syrup near the boiling point for some time after adding the acid. Again, it may be that you did not use enough acid. A level teaspoonful for every 15 to 20 pounds of sugar is the amount usually recommended. In some cases it is not necessary to use acid in making syrup to prevent crystallization, especially if the colonies are strong and are well packed at the time the syrup is fed.

REMOVING SUPERS OF HONEY AT BEGINNING OF WINTER.

Question.—Would it be unwise to take off two supers of comb honey from one of my hives this late in the season?

William Wordsworth.

New York.

Answer.—If the bees have enough honey in the brood-chamber for winter the two supers of comb honey should be taken off; but, if there is any question about there being sufficient stores below, it will be better to leave one of them on the hive, unless you have some combs of honey to give them for winter.

GLEANED BY ASKING

Geo. S. Demuth

John Longaker.

If the bees are well equipped with stores in the brood-chamber they will cluster below during the first cold weather leaving the supers free of bees so they can easily be taken off any cool morning; but, if there is not much honey below, the cluster of bees will extend at least into the first super. If one of the supers of comb honey is left on the hive for winter stores, of course the sections will not be fit to use again for comb honey, but it will be better to sacrifice the comb honey rather than let the colony starve.

BEES USE EXTRA STORES WHEN DISTURBED BY MOVING.

Question.—My colonies now have 25 pounds of honey each for winter, and I want to move them 24 miles to a new location. Will the disturbance of moving cause them to consume so much of their honey that they will not pull thru the winter?

Washington.

L. M. Brown.

Answer.—The bees will not consume much of their winter stores because of moving at this season, certainly not enough to put them in danger of starvation. At first when the colonies are loaded for moving some of the bees will fill their honey-sacs, and of course a part of this will be consumed, but before the journey is completed the bees will quiet down somewhat and no doubt put most of the honey back into the cells. At other seasons the disturbance from moving would be greater, causing the bees to consume more honey. It will be necessary for you to examine your colonies early in the spring to see if they have enough stores, for while 25 pounds should be plenty for the broodless period of winter, when spring brood-rearing begins they will need more unless they can gather a supply from early spring flowers. Many beekeepers now leave 40 pounds or more for each colony for their winter and spring supply, but of course you can give the additional supply if needed in the spring.

MEDIUM COLONIES REAR BROOD LATER.

Question.—In preparing my bees for winter I find some of the medium-sized colonies still have emerging brood, but the strongest ones do not. Is this an unfavorable condition?

A. E. Trapp.

Montana.

Answer.—It is quite natural for weak colonies to rear brood later than the strong ones. In fact very weak colonies may be expected to rear brood during the winter, while the strong ones remain broodless until the normal time for brood-rearing in the spring. No doubt your medium-sized colonies were following the normal behavior of weak colonies in this respect, thus continuing brood-rearing a little longer. If their last-emerged bees can have a cleansing flight before winter begins, the additional young bees will be beneficial to these medium-sized colonies.

LEAVING SUPER OF HONEY FOR WINTER.

Question.—My bees have filled a shallow extracting super but have not drawn out quite all of the frames of foundation below. They could all go into the lower hive-body for winter, but there is not enough honey below for winter. Should I leave the shallow extracting super on all winter?

C. G. Wilmot.
Ohio.

Answer.—Yes, by all means leave this honey with the bees. Of course it would be easier for the bees to keep the regular brood-chamber warm during the winter than to keep both chambers warm, but you can overcome this disadvantage by protecting the hive better by winter packing. You can take out the empty combs and frames of foundation from below and fill the space with chaff-cushion division-boards to reduce the space in the hive for winter, but as soon as more room is needed in the spring it should be given.

FRAMES OF FOUNDATION BELOW FOR WINTER.

Question.—Will it be well to put a hive-body filled with frames of foundation under each brood-chamber to make the hives two story, so that when the bees fill the upper story with brood in the spring they can go below?

P. H. Dunn.
Iowa.

Answer.—No. This extra story should not be given until spring. If frames of foundation were given now the foundation would be more or less damaged before it could be drawn out next season. For best results the foundation should not be put into wired frames very long before the bees can draw them out into combs. Furthermore, next spring the bees would be slow about drawing out foundation under their brood-combs. It will be better to wait until the bees need more room next spring, then put the new hive-body on top, at the same time transferring one or two combs of brood from the lower story into this upper story to induce the bees to begin work on the foundation promptly.

LOCATION OF HONEY FOR WINTER.

Question.—In using five full frames of honey in the upper story together with four or five empty combs, should I place the combs of honey in the middle of the hive or on one side or would it be better to alternate them?

Bernard Kunz.
Ohio.

Answer.—The frames of honey should be directly above the cluster, so that as the bees use the honey they can move upward as the honey is consumed throughout the winter. Since the bees usually form their winter cluster where the last of the brood emerged in the fall, the stores in the upper story should be above the fall brood-nest, which is usually in the middle of the hive. It would be better not to have combs entirely empty in the upper story. For this reason some prefer to use shallow extracting supers for the extra supply of stores.

RIM UNDER BROOD-CHAMBER FOR WINTER.

Question.—Will bees winter better in the cellar if a two-inch rim is put below the brood-chamber and the entrance contracted to $\frac{3}{8}$ inch by 3 inches?

New York.
F. M. Doty.

Answer.—Formerly it was thought to be necessary to have a deep space below the

frames for winter to afford better ventilation and furnish a place for dead bees, but in a warm dry cellar this is not necessary.

WINTER ENTRANCE IN TARRED PAPER PACKING.

Question.—Should the regular hive entrance be contracted when the bees are in tarred paper, as described on page 618, October issue of Gleanings, a $\frac{3}{8}$ by 2-inch hole being cut thru the tarred paper for an entrance?

Clay Dunkin.
Indiana.

Answer.—It is not necessary to use the entrance stop when bees are packed as described on page 618, for the tarred paper covers the entrance completely. In the spring when a larger entrance is needed the hole thru the paper can be enlarged as desired.

CARE OF EXTRACTING COMBS IN THE SOUTH.

Question.—Should I remove my extracting-combs for winter? If so, how can I protect them from the wax moth larvæ?

Max Wennenweser.
Texas.

Answer.—In the tropics the safest place to keep the extracting-combs is on the hives where the bees can take care of them throughout the year. Perhaps in southern Texas this is the best plan, tho wherever the weather is cold in winter the extracting-combs should be taken off the hives and stored until spring in order to keep the bees warmer during winter. If the combs are exposed to freezing temperature for a few days the moths will be killed, and the combs are then safe until spring unless more eggs are laid among them. In warm climates where freezing temperatures can not be depended upon to keep down the moths they can be controlled by fumigation. To do this pile the supers of combs in tight piles, five supers in a pile, and on top of each pile in an empty super place a dish containing two ounces of carbon bisulphide and cover the pile tightly. This should be repeated after two weeks, after which the pile should be kept covered so no moths can enter.

SMALL NUMBER OF BEES IN FALL.

Question.—Why should my hives be heavy with stores and the bees small in numbers this fall? Is it possible that skunks have killed off the bees?

New York.
Clarence T. Bullock.

Answer.—It is natural for the colonies to become smaller as winter approaches, especially if there is a fall honey flow which causes the older bees to wear themselves out and die before cold weather. Usually the strongest colonies will not have more than three or four pounds of young bees at the beginning of winter. They may also have several pounds of old bees at this time if they have not worn themselves out searching for nectar in fall flowers, but the real strength of the colonies at this time is largely in the young bees. If the old bees have disappeared because of hard work late in the season, the colonies are still strong since the remaining bees are young. The skunks may have killed off many of the bees, but it is probable that the reduction in numbers which you noticed is the natural reduction of the colony for winter.

THE annual convention of the Indiana State Beekeepers' Organization will be held in the State House at Indianapolis on Dec. 15 and 16.

The Illinois State Beekeepers' Association will hold its annual convention in Springfield, Ill., on Dec. 14 and 15 at the St. Nicholas Hotel. G. M. Withrow, Mechanicsburg, Ill., is secretary.

* * *

The Wisconsin State Beekeepers' convention will be held Dec. 8 and 9, at Milwaukee auditorium, Milwaukee. Write for program to H. F. Wilson, Beekeeping Section, University of Wisconsin, Madison, Wis., who is secretary.

* * *

The annual meeting of the Chicago Northwestern Beekeepers' Association will be held in Room 1811, Hotel LaSalle, Chicago, on Dec. 5 and 6. Routine business will be disposed of on the forenoon of Dec. 5, after which E. S. Miller will give his report as delegate to the American Honey Producers' League. In the afternoon of this day there will be addresses by E. W. Atkins and S. B. Fracker, and on Tuesday E. R. Root, Jay Smith, and G. H. Cale will address the meeting.

* * *

An effort to reorganize the Ohio State Beekeepers' Association as a federation of county societies will be made at the annual winter meeting to be held during Farmers' Week at Ohio State University, Columbus. The officers and executive committee of the association are urging all beekeepers to be present at the winter meeting when this important matter of new organization will be decided.

* * *

The second annual meeting of the American Honey Producers' League will be held Jan. 30 and 31, 1922, in Salt Lake City, Utah. The Utah beekeepers promise the members of the League "the time of their lives." Every beekeepers' association, whether a member of the League or not, is urged to send a representative to this convention. "Honey and How to Use It," the recipe book put out by the American Honey Producers' League, is free to any one asking for it. The secretary of the League is H. B. Parks, whose address is Box 838, San Antonio, Texas.

* * *

F. B. Paddock, State Apiarist of Iowa and Secretary-treasurer of the Iowa Beekeepers' Association, is doing excellent work for the beekeepers of his State. He is the moving spirit in the twelve-weeks' winter course extending from Jan. 2 to March 22, 1922, in



beekeeping, a t Iowa State Col lege of Agricul ture. He has ar ranged this ma jor course cov ering the twelve weeks, to give a thorough exposi tion of beekeep ing in all lines, and also a course in beekeep ing for those specializing in either horticul ture or poultry husbandry, preparing those who take this minor course to undertake beekeeping on a small scale or sideline. Mr. Paddock is also largely responsible for the large membership of 625 enrolled in the Iowa Beekeepers' Association. The annual meeting of this association will be held Dec. 15 and 16 at Waterloo, and a very interesting program is promised. The Iowa State Association placed 114 orders for its mem bers during the past year, amounting to \$5100, and effected a saving of \$1300 by so doing.

* * *

The New Jersey Beekeepers' Association will hold its annual convention in Trenton, N. J., on Jan. 12-13, 1912. J. E. Crane of Middlebury, Vt., and Messrs. Stewart and Bedell of New York will be on the program as well as other interesting speakers. The annual dinner on Thursday evening will be a very enjoyable occasion with Hon. Emmor Roberts, State Senator for Burlington County, as toastmaster.

* * *

Among the speakers on the program of the annual meeting of the Michigan Bee keepers' Association to be held at Lansing, Mich., Dec. 1-3, are Russell H. Kelty, Elmer T. Beach, G. H. Cale, J. W. Stine, Prof. H. F. Wilson, Dr. Ernest Kohn, E. A. Little, E. S. Miller, and Geo. W. Dial, manager of the Michigan Honey Producers' Exchange. The annual banquet is slated for 6:30 p. m. on Friday, Dec. 2.

* * *

For the first time since 1918 the Massachusetts Agricultural College is able to be of service to beekeepers of the State. This fall Assistant Professor N. E. Phillips was ap pointed to the staff as instructor in bee keeping, and has written a new correspond ence course in beekeeping, which is a thorough and systematic study for the beginner with bees. The college is able to offer this course to persons interested in beekeeping at the same rate as its other correspondence courses, \$2 for enrollment fee. The course may be started at any time during the winter and continued as the time of the student permits.

* * *

Beekeepers in the famous fruit belt of Yakima Valley, Wash., reckon their honey crop at a million pounds this year.

L AST summer while watching my bees I noticed a bumblebee enter the hive. I sat there and watched. After one or two minutes out came a bee, landed on the board, spun around on its side and died. I counted 25 bees do this, then no more came. I opened up the hive and Mr. Bumblebee was dead on the floor." —W. Stoddard, Essex County, Mass.

"As we wrote you a few days ago the peddling of near-by-production honey has been a big obstacle this season in booking orders among the dealers. Our city market on the north side of the city is flooded with all kinds of extracted and comb honey for sale, and the writer only recently made a personal survey of seven or eight of our large down-town stores and found they are fully loaded. We are in hopes this situation will clear up before long, after which we know the business on Airline honey will come in heavier than it has during the past few months." —Geo. A. Mendes & Co., brokers and packers' agents, New York City. (Gleanings has never before so strongly advocated the selling of honey locally as during the fall of 1921. This advice seems to have been taken by a great many beekeepers and to have worked well. Mendes & Co. give eloquent if not cheerful testimony in the paragraph quoted above.—Editor.)

"On page 707, November Gleanings, E. M. Cole mentioned the name 'crystallized' for candied honey and 'liquid' for extracted. Why not name them comb honey, combless honey, crystallized honey?" —Morris Aaroe, Warren County, N. J.

"As to your editorial regarding honey labels, etc., referring directly to the idea of leaving off the word 'extracted': Close observation in handling large quantities of honey during past years, indicates to us that it is a wise plan. Very many merchants advertise honey as 'strained' honey. This practice we have fought from time immemorial almost, but never advocated leaving out the word 'extracted,' however good the idea may be. You will observe that our labels do not have the word 'extracted' thereon." —G. W. Bercaw, Manager of Aliso Apiaries, Los Angeles, Calif.

"The following is an interpretation of the net weight law in Michigan as applied to comb honey: 'The Michigan Department holds that in the case of comb honey it is legally stamped, provided the producer ascertains the weight of the lightest section (in the case) and then on each section states plainly that the minimum weight is so much, stating the actual contents, exclusive

BEES, MEN AND THINGS

(You may find it here)

of the wooden portion, in such lightest section.' Relative to the selling of comb honey by the section instead of by weight, the opinion is that 'an agree-

ment between the buyer and seller to purchase comb honey by the section instead of by the pound is entirely legal.' " —B. F. Kindig, Lansing, Mich.

"What about a winter nest of empty cells for bees to cluster on, I hear some one say. As many know, I do not for a moment believe that enough empty cells are necessary for bees to cluster on; in fact, I might say that I know that such is not the case. I have tested the matter out thoroly, and I happen to know that the most of the extensive producers in Ontario entirely agree with me on this question. In the October issue of Gleanings, page 617, Mr. Demuth well says, 'There is greater danger in having too many vacant cells than in having too few,' and I have always maintained that a big winter nest is the cause of more winter losses than all other causes combined." J. L. Byer, Markham, Ont.

"We have undoubtedly the best bees in the world, and we produce very fine qualities of honey; but we have only a few beekeepers, and in many places in Italy, especially among country people, bee culture is just what it was some centuries ago. We have also some very skillful beekeepers and several good bee journals; but beekeeping has not been as widely diffused as it should have been, as our government does nothing for it, and associations and bee journals are not sufficient for the purpose." —Luigi Scanzola, Genoa, Italy.

"I have learned that the sun will kill bees. I had in my yard three colonies of hybrids and wanted to requeen them, so secured three good Italians and started to requeen by taking one of them out in the yard and putting the cage on an old winter cover. I then removed the black queens and put them in Miller cages by the side of the new queen. I then proceeded to go thru the hives for any queen-cells that might be present. To my great surprise, when I turned to get the new queen, the whole lot was dead, the new queen and all her attendants as well as the queens I had removed." —T. Bartlett Bragg, Hillsborough County, N. H.

"I wonder what kind of ruler the folks who say that a bee line is a straight line have been accustomed to use. My bees remind me of Saturday night in days gone by. But if a law-abiding bee's line is a straight line where do you suppose my bees are getting it?" —Robert Davis, Oxford County, Maine.

IN Our Homes for September I told you how I stood up in public and announced that from that day and hour I was going to work for the Lord Jesus Christ first, and for self second. During the night there was a mental debate as to what or how I should undertake to carry out the new program.

At that time I was a jeweler and watch repairer. My store was, as a rule, opened with the very first places of business on the street; and it was a good deal the fashion for the merchants clear along up and down the street to be out early with their brooms sweeping the pavement. My next-door neighbor was a grocer, and we were quite well acquainted. As we both stood there, with broom in hand, I said:

"Alec, you want to come out to the meetings we are having in the different churches."

The man with a broom on the other side of my place of business came up and said:

"What is that you are saying, Mr. Root?"

I told him I was inviting my neighbors, right and left, to come to the meetings we were then having, and pretty soon a crowd gathered around us. The fact that A. I. Root, who had scarcely entered a church or Sunday school for years past was out inviting his friends "hither and yon" to come to church, was an innovation. Pretty soon somebody said, "You want them to come to your church, of course."

Now, even if I had not been a church-goer, I am glad to tell you that Mrs. Root and the two children were always promptly on hand both at church and Sunday school. Well, in response to the above hint (that of course I was working for the Congregational Church), I replied:

"No, no! Come to any of the four churches in our town."

Then somebody said, "Oh! that is too thin. Of course you are all working for your own church."

Then they began to banter me. My next-door neighbor finally said:

"Mr. Root, if you will get all four of the preachers in our town to stand together like brothers in one pulpit I will go to church." Others in the crowd said, "And I," "And I," "And I."

Then there was a lot of merriment to think they had cornered me; for away back in those times churches did not stand together as they do now—that is, in most places. But I accepted the challenge. I

Lord, what wilt thou have me to do?—ACTS 9:6.
Behold, he prayeth.—ACTS 9:11.

I say unto you, Love your enemies, bless them that curse you, do good to them that hate you, and pray for them which despitefully use you, and persecute you.—MATT. 5:44.

told them we would do that very thing, and added that I would hold them to their promise to come, and I think I dropped business and everything else and started out to visit our ministers and tell them of the challenge. They replied smilingly that they would take

great pleasure in doing just that very thing. Well, dear friends, from that day on I have had many wonderful answers to prayer, and many of them have been *swift* answers. In looking back and reviewing it I do not wonder that my faith has never once failed; and it has just occurred to me, that before I go down to my Florida home, where I have no stenographer, I had better leave here an account of some of those wonderful answers to prayer of years ago, to be used in case there should be no Home paper forthcoming for the winter months.

Today is Oct. 4, and we expect to start for our Florida home in just two weeks. Well, now for my first experience in prompt answers to prayers.

Three of our ministers acquiesced at once. The pastor of the fourth one lived out of town about half a mile, and I started out with enthusiasm to see him. To my great disappointment, however, this fourth pastor declined; and he said, furthermore, that if I had been at all acquainted with the tenets of his denomination I would have known better than to promise the crowd as I had done. I did not give up easily, and I urged until he finally got up, and, I think, buttoned up his coat, suggesting by the act, I took it, that I could not take any more of his time. In fact, I felt that I had been "snubbed," to use a slang phrase. Now, I had gotten a little religion at that time, but not enough so but that my temper came up. I think, to call things by their right name, that I went down the steps just a little "mad." But I was not vexed enough to keep myself from remembering the Bible promises I had just been going over so gladly. I began to pray; and, by the way, good friends, if there is ever any time when you ought to pray it is when your temper is coming up. As there were then no houses, or at least but few, between the parsonage and the business part of the town, I prayed out loud; and from that time on, when I have been greatly interested in some particular matter, I have been in the habit of going out into a cornfield or somewhere where I could talk out loud and tell the dear Savior my troubles and what I wanted. Cement



sidewalks had not been invented away back in those days. Our walks were all made of boards; and while I was praying something as follows, "Dear Lord, you see how I have utterly failed, and, will you not take that mistaken servant of thine in hand and make him see how much the good of our town and community demand that he should change his mind?" While I was talking I heard the sound of heavy footsteps along the board walk, coming up behind me. As I turned about one of the officers of the church came up, and, placing his hand on my shoulder, said, "Mr. Root, our pastor has asked me to catch you, if possible, before you reach town, and say that he has reconsidered the matter you presented, and that he will acquiesce in what you proposed, and will do his best to make the meetings a success."

There you have it, dear friends—one of my first surprising answers to prayer.

At the time appointed, our four ministers sat side by side in the pulpit of one of our churches. Rev. A. T. Reed, the "boy preacher" I have told you about, opened the meeting, and then said to me, "Mr. Root, we four pastors of the churches of Medina with this goodly audience are here ready to do your bidding. Each one of us cannot preach a sermon. What is your suggestion?"

I asked them to preach four sermons each ten minutes long. I think the good friends on the sidewalk, who promised to come to such a meeting, kept their promise; and as it was pretty well talked thru our town, there was a large audience present. There was a big revival and these union meetings have been kept up more or less from that time to this. When the weather is suitable we often have our meetings on the park in the center of our town.

Only a few doors from my own store there was another jeweler, a younger man than myself. He and I had been in a jangle as to who had the best goods at the lowest prices. This jangle had got into our county paper, and I am afraid we had been calling each other names. I once apologized to the editor for some statement that I wanted in, and he replied something like this:

"Mr. Root, it does not matter to me how much you two quarrel, so long as you pay me ten cents a line for publishing what you have to say."

Of course, the editor was not a Christian. Well, after I had visited the ministers it occurred to me that my next job was to call on my rival and tell him of my new departure. I had gotten hold of the beautiful text, "Love your enemies, do good to them that hate you, and pray for them that despitefully use you," I told him that if he would forgive me for my past unbrotherly and unchristianlike conduct I would try to help him instead of hindering him in the future. He did not say much. Perhaps he thought he would wait awhile.

Just at that time each of us had invested in a silver-plated cake-basket. The price was about \$10.00. A lady had been looking at both of the baskets. She finally came to me and said, "Mr. Root, I like the basket Mr. Wells has rather better than yours; but I want to be sure it is just as good silver plate. I believe you will be honest in the matter, and tell me if you think his is what he represents it to be." She added, "I know I have troubled you a great deal already, and I hope you will excuse me if I trade with him instead of you." I told her that, altho the baskets were made at different places, I believed that both were all right, and that she need not apologize for bothering me. I said it was a part of my business. She took the other basket, and I think she reported what she said; and for several days, and perhaps for weeks, I sent customers his way and felt happy in doing so. What do you think happened? He came to me one day and said something like this:

"Mr. Root, I do not understand this. I never heard of such a thing before, where a man would go out of his way to send trade to one who has been a rival in business. Now, if that is religion, I want some religion, too. God knows I need it."

I took him over to my pastor's study, where he knelt down with the pastor, and said in effect, "God have mercy on me a sinner," and from that time on we were friends; and it was my privilege to have a good talk with him just before he died a few years ago. I lost a little trade, to be sure, by my new departure; but, oh dear me! what comparison is there between a few dollars and cents more or less and the saving of a soul?

He which converteth the sinner from the error of his way shall save a soul from death, and shall hide a multitude of sins.—JAMES 5:20.

In another Home paper I will tell you something of the blessings that followed, and more about answers to prayers.

BRADENTOWN AND BRADENTOWN PEOPLE.

"Thy people shall be my people, and thy God my God."—RUTH 1:16.

"If ye have faith . . . ye shall say unto this mountain, Be thou removed, and . . . it shall be done."—MATT. 21:21.

"The wilderness and the solitary places shall be glad for them; and the desert shall rejoice and blossom as the rose."—ISA. 35:1.

Mrs. Root and I reached Bradenton, Fla., Oct. 21, and my attention was at once called to numbers of new buildings going up almost everywhere, not only residences on all the streets but great store buildings in the very heart of the town. Of course many of the residences, especially out of town, were but humble "homes," but there were quite a few that were to me gems of artistic beauty.

I especially admired the rock and cement work. On our own "Richland Avenue" there had been no new structures for some years, but now there are four, and one of them with its work of arches of native rock and cement, makes me want to stop and shout, every time I see it.

Well, the residences are not all. Right in the heart of the "city," where used to be a fine brick edifice, in fact right where Ernest and I used to get our nice dinners only a year ago, there are now only great heaps of sand, brick, crushed stone, etc. When I asked, in surprise, what had become of the fine structure, with its "plate glass windows," etc., the reply was:

"Moved to yonder place."

"What? Moved that great brick building?"

Sure enough, there it stood, without so much as a crack or blemish, so far as I could see. Do you wonder that I thought of my second text, about moving mountains, and it was faith that did it in both cases. And, my good friends, it was this same faith that has enabled our country to remove the demon of intemperance, and it is finally going to be pushed off, with war and its resulting famine, from the whole of the great wide world.

Bradenton is a busy place. No "great army of unemployed" about here. Not much. Shall I tell you how I know? Well, we have just had a "Tropical Hurricane." It did not blow over my windmills, but it blew the rubber belts off, blew off one wing or sail and "twisted both tails." But thanks to my big, stout "long-time friend," Kaiser, we were out of "juice" for only a few hours. Our home didn't fare so well. It gave the house such a shaking up that about a yard square of plaster came down from overhead in our best room. Of course I sent for a plasterer to repair the damage, but he had so many jobs I could never find him at home. The next man had promised all he could do until January. Everybody is busy, and from the way they all seem to be rushing things, it made me think of my last text, especially where I see them cleaning up and building new homes, away out in the pine woods and among the scrub palmettoes. I want to live and die among busy people. See first text.

We reached here Friday. By Saturday night I had planted peas, beans, radishes, turnips, spinach, curled cress, and last but by no means least, Hubam clover. If you want to know about this last read the bee journals and the great agricultural periodicals. It is the plant that is going to make the great world a "land flowing with (both) milk and honey." Well, the Hubam was up so you could see the rows in only two and three-fourths days. It has made a growth of seven or eight feet in less than four months here during our Florida winters and has been called by bee and cattle men a better feed than even alfalfa.

"Treasures in Heaven" as Well as on Earth.

I found the following on my table one morning when I came to work. After having read it I uttered a loud "amen." After you have read it do likewise, and then turn in and help.

Wellesley Hills, Mass., April 19, 1921.

As the great life insurance companies are spending huge sums on doctors, scientific investigations, and district nurses to improve the health of the nation, so we business men should spend huge sums to develop those fundamental religious qualities of integrity, industry, faith, and service, which make for true prosperity. I repeat, the need of the hour is—not more factories or materials, not more railroads or steamships, not more armies or navies—but rather more Christian education. This is not the time to reduce investments in schools and colleges at home, or in Y. M. C. A. and similar work in China, Japan, Russia, or South America. This is the time of all times to increase such subscriptions.

Roger W. Babson.

Requeening, and Something About "Spotting Robbers."

I have been quite successful growing queens. I have requeened 50 colonies—two of which are at home, and so "ambitious" that I have got to carry them to an outyard. They watch me and stand ready to jump into any hive I open. This morning they went after a new nucleus which had only a few young bees. I opened up the hive, and they went on a rampage until I covered the hive with a blanket, when they soon quieted down. When I uncovered the hive, they were soon at it as bad as ever. I laid a frame of honey down, and had Mrs. Abbott sprinkle them with flour so I could see where they went. On watching the yard I could easily see that two colonies were doing all the mischief. In the morning I will carry them off and drop them like a "stray cat."

D. W. Abbott.

Bradenton, Fla., Sept. 3, 1921.

In regard to spotting robbers and taking them away by sprinkling them with flour, my impression is that it is an old idea; but nevertheless it is a good one. It just now occurs to me that another kind of robbers of a recent date, especially in our great cities, when caught red-handed, make for a crowd; and when the policeman finally grabs him he declares he is not the man—a mistake has been made. Could we not manage in some ingenious way to sprinkle *these* chaps so we could tell better "who is who?"

My long-time friend, I am glad to hear of your success in raising queens; but if I understand you correctly you have requeened 50 colonies during the past summer. I am aware that much has been said about requeening all our colonies every season; and I think Ernest tells me that in California, some beekeepers keep their queens only about six months. I may be, in my old age, a little behind the times; but I do not think I would destroy any queen that seemed to be "making good" unless she were at least two or three years old. See clipping below:

It may be of interest to know that the queen purchased three years ago from you as "untested" proved the most valuable queen I have ever owned—proved to be a breeder of highest order, and is still on the job. This, her third summer, her colony made a good crop of honey for the year, and all my queens are being raised from graftings from her cells. Big two dollars' worth! We have dubbed her "Lady Root."

A. J. Reamy, Jr.

Quitman, Ga., July 9, 1921.

HONEY MARKETS

(Continued from page 736.)

currency is about 7½ to 8 cents per lb for extracted honey. There has been very little doing in beeswax during the past month. The value per lb. at today's rate of exchange is about 24 cents. Taylor & Co.

Liverpool, England, Nov. 1.

CUBA.—Honey today is selling at 40c per gallon, and yellow beeswax at 20c per pound.

Matanzas, Cuba, Nov. 8. Adolfo Marzol.

Prices Received by Beekeepers as Reported to the Bureau of Markets

Nov. 1, 1921.

In a long tabulated report, giving prices received in every State, date of Nov. 1, the Bureau of Markets gives the average for the United States as follows:

Wholesale (and in large packages): White comb per section, 24.2c; dark comb per section, 20.6c. Extracted, per lb., white, 14.4c; extracted amber, 12.7c; extracted dark, 10.9c.

Retail: White comb per section, 28.4c; dark comb per section, 24c. Extracted, per lb., white, 20.8c; extracted amber, 18.2c; extracted dark, 15.5c.

The variation in the individual prices reported was large, ranging often as much as a third lower or higher than the average. As always, the beekeepers in the eastern United States reported receiving considerably more for both their comb and extracted honey, retail and wholesale, than did the western beekeepers.

From Producers' Associations.

We find inquiry for both comb and extracted honey steadily active, but buyers are unwilling to pay prices we are quoting. Comb honey is being placed in coast markets at extremely low figures by independent producers in near-by States. Extracted honey is being sold by independents in eastern Idaho and in near-by States at much lower prices than we have quoted to date. Both comb and extracted stock may be sold readily when we meet current market prices, and our members are now showing inclination to move what they hold.

We believe local honey should be sold now at what it will bring, or held until next spring.

Idaho-Oregon Honey Producers' Ass'n.

P. S. Farrell, Sec'y.

The price of honey remains unchanged, altho producers who yet have honey on hand expect to advance the price soon. The demand has increased steadily since the first of September and is now strong. The bulk of the honey is sold. The small amount remaining in the hands of the producers is not large enough to fill the demand. The prevailing price to the producer is 8.9c, extracted, 60 lbs. basis, and 12-14c bulk comb, same basis. Contrary to former years, the great demand this year was for 3's and 5's bulk comb. On account of honey crop failure in other States, Texas has placed much honey in territory new to her.

Texas Honey Producers' Ass'n.
San Antonio, Tex. E. G. LeStourgeon.

HONEY PRODUCTION OF 1921 WITH COMPARISONS.

States or Territories.	Usual percent of U. S. crop.	Average yield per colony.				Kind of Honey				Disposal			
		1921		1920		1913-		Comb		Extracted		Bulk	
		1921	1920	1919	1921	1920	1921	1920	1921	1920	1921	1920	1915-
Maine	*.1	57	26	37	61	75	28	17	11	8	6	10	9
New Hampshire	*.1	38	39	37	72	87	25	12	3	1	8	4	15
Vermont	*.1	60	42	38	60	71	37	25	3	3	33	25	34
Massachusetts	*.1	46	46	31	45	59	51	37	4	4	9	2	8
Rhode Island	*.1	10	20	41	3	10	97	89	0	1	0	0	0
Connecticut	*.1	52	80	35	42	53	55	41	3	6	14	2	15
New York	.5	75	70	53	38	48	61	51	1	1	42	38	42
New Jersey	*.1	55	55	37	35	36	62	63	3	1	15	20	21
Pennsylvania	.4	45	57	42	59	56	38	39	3	5	16	25	22
Delaware	*.1	..	20	29	..	47	..	29	..	26	..	0	15
Maryland	*.1	28	45	39	49	63	35	30	16	7	35	21	22
Virginia	.3	18	45	40	52	65	33	17	15	18	12	13	15
West Virginia	.1	29	37	28	48	52	13	15	39	34	12	7	9
North Carolina	.3	10	55	30	35	34	29	20	36	48	10	5	10
South Carolina	.1	17	28	26	55	46	10	24	25	30	7	7	17
Georgia	.3	35	22	33	23	25	49	42	28	32	28	25	24
Florida	.2	44	37	66	17	14	82	85	1	1	50	35	52
Ohio	.3	85	64	38	54	59	45	39	1	2	30	20	22
Indiana	.3	60	55	42	43	53	45	36	12	10	9	6	5
Illinois	.5	46	42	46	28	40	67	57	5	3	20	16	26
Michigan	.4	95	69	48	38	42	61	58	1	1	7	27	35
Wisconsin	.4	42	85	52	25	36	75	63	0	1	29	18	32
Minnesota	.3	62	78	50	23	35	74	64	3	1	18	18	26
Iowa	.5	50	75	58	43	49	55	49	2	3	19	20	22
Missouri	.3	37	67	34	30	34	50	43	20	22	5	9	10
North Dakota	*.1	150	..	67	36	50	64	50	0	0	0	..	0
South Dakota	.1	85	97	62	48	49	46	44	6	8	12	39	11
Nebraska	.1	55	71	51	55	52	39	42	6	6	18	16	17
Kansas	.2	32	43	33	57	59	36	31	7	11	15	20	9
Kentucky	.4	45	30	42	23	34	49	49	28	17	30	29	41
Tennessee	.3	28	17	29	24	30	42	35	34	35	6	6	12
Alabama	.3	29	22	37	..	25	..	48	..	23	36	5	36
Mississippi	.2	39	25	35	45	45	30	27	25	28	20	12	23
Louisiana	.1	55	61	37	19	14	59	46	22	40	35	54	43
Texas	.5	45	70	37	6	7	63	61	31	32	50	46	52
Oklahoma	.1	27	43	31	24	32	45	28	31	40	2	2	5
Arkansas	.1	37	25	25	35	36	29	23	36	41	15	13	11
Montana	.1	88	86	81	41	58	52	38	7	3	40	37	34
Wyoming	.1	100	85	77	38	66	57	33	5	1	65	..	58
Colorado	.3	58	52	55	57	56	43	42	0	2	65	76	64
New Mexico	.1	50	55	47	59	42	35	47	6	10	50	85	56
Arizona	.1	42	92	61	4	7	96	91	0	2	75	39	64
Utah	.1	70	108	70	10	10	90	89	0	1	55	43	57
Nevada	.1	25	83	65	..	36	..	64	..	0	..	68	79
Idaho	.2	80	97	71	15	34	85	64	0	1	66	64	66
Washington	.2	50	60	52	24	31	69	67	7	1	37	36	45
Oregon	.1	60	65	46	..	53	..	43	..	4	40	36	36
California	.10	23	93	61	5	12	95	87	0	2	57	71	86
United States	100	44.2	59.1	43.3	30.4	35.6	55.7	50.2	13.9	14.2	20.1	28.4	34.3

* Less than one per cent.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Carl F. Buck, P. W. Sowinski, A. C. Ames, C. H. Hodgkin, Martin Carsmoe, D. L. Woodward, D. R. Townsend, Gelser Bros., Geo. M. Sowarby, E. J. Stahlman, Edgar Williams, J. D. Beals, Adam Bodenschatz, J. H. Corwin, Geo. W. Coltrin & Son, J. B. Hollopetter, Mrs. S. A. Bradshaw, F. M. Schader, A. H. Newman, Bobbs-Merrill Co., Rosedale Apiaries, DeGraff Food Co.

HONEY AND WAX FOR SALE

FOR SALE—Dark clover honey from the capping melter. J. F. Moore, Tiffin, Ohio.

FOR SALE—Buckwheat honey in 60-lb. cans. Bert Smith, Romulus, N. Y.

FOR SALE—Buckwheat honey in 5-lb., 10-lb., or 60-lb. cans. H. B. Gable, Romulus, N. Y.

FOR SALE—Finest quality alsike, alfalfa, sweet clover honey in 60-lb. cans. R. Selwyn Wilson, Buhl, Idaho.

FOR SALE—N. Y. State light amber honey, two 60-lb. cans in case, 10c a lb. I. J. Stringham, Glen Cove, N. Y.

FOR SALE—A ton of extracted honey suitable for baking purposes. E. D. Townsend & Sons, Northstar, Michigan.

FOR SALE—Clover, amber, and buckwheat honey. 60-lb. cans and 5 and 10-lb. pails. C. J. Baldridge, Kendalia, N. Y.

FOR SALE—Finest quality clover-basswood and buckwheat honey, 5, 10, and 60 lb. tins. H. F. Williams, Romulus, N. Y.

FOR SALE—Choice clover honey in new 60-lb. cans, all produced on new combs. Sample 20c. W. B. Crane, McComb, Ohio.

FOR SALE—Buckwheat honey in 60-lb. cans, one can to case, liquefied, \$6.00. Two cans to case, granulated, \$10.80. John J. Lewis, Lyons, N. Y.

FOR SALE—Choice clover honey, 15c; buckwheat, 10c per pound. Two 60-lb. cans to case, f. o. b. here. Wm. Vollmer, Akron, N. Y.

FOR SALE—Choice white clover honey in 60-lb. cans, two cans in a case, at 13c per lb. Sample 10c. Leonard S. Griggs, 711 Avon St., Flint, Mich.

FOR SALE—12,000 lbs. of choice white clover honey in 60-lb. cans at 15c per lb., f. o. b. Brooksville, Ky. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Clover, basswood, or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey. C. B. Howard, Geneva, N. Y.

FOR SALE—White and amber honey in 5-lb. pails, packed in cases of 12. R. C. Wittman, St. Marys, Pa.

CLA-FO-NY-QUALITY buckwheat honey (liquid or crystallized), 5-lb. pails, 65c each, 15 to case. Clarence Foote, Delanson, N. Y.

FOR SALE—Extra fancy clover honey well ripened and put up in new cans, 60 lbs. net; per case of two cans, \$15.50. Edw. A. Winkler, R. F. D. No. 1, Joliet, Ill.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Sample and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Fine quality light amber honey, over half clover. Put up in 5-lb. pails, packed in barrels. Heated to prevent granulation. Price right. The Scott Apiaries, LaGrange, Ind.

FOR SALE—Several thousand pounds of the finest quality clover extracted honey. New cans and cases. None better produced. Howard Townsend, Northstar, Michigan.

FOR SALE—Extra choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Fillion, Mich.

FOR SALE—White honey, 15c a lb.; L. A. alfalfa, 14c, in two 60-lb. cans; Chilian in 165-lb. kegs, 10c; light amber honey in 50-gal. bbls., 80c a gal. Beeswax, 30c a lb. Walter C. Morris, 105 Hudson St., New York City.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 14c; water-white clover or white sage, 13c; extra L. A. sage, 11c; N. Y. State buckwheat, 10c, for immediate shipment from New York. Hoffmann & Hauck, Inc., Woodhaven, N. Y.

YOU have to buy only 600 pounds of E. D. Townsend & Sons' fine clover extracted honey to get their very lowest wholesale price this year. If your customers require the best, write them at Northstar, Michigan, for their price.

FOR SALE—4000 lbs. medium amber extracted honey, left on the hives until thoroly ripened. Put up in 60-lb. cans, two to the case, at \$12.00 per case, f. o. b. at Marietta. J. G. Burtis, Marietta, N. Y.

FOR SALE—7000 lbs. fine quality white sweet clover honey, put up in good clean second-hand cans. It is well ripened and rich, and the price as long as it lasts is 12c per lb. in 60-lb. cans, two cans to the case. Try it. Joe C. Weaver, Cochrane, Ala.

FOR SALE—No. 1 white comb honey, \$6.00 per case; No. 2 white comb, \$5.00 per case of 24 sections; six cases to carrier. Clover extracted, two 60-lb. cans to case, 15c a lb.; clover in 5-lb. pails, \$1.00 each, 12 pails to case. Amber baking honey in 60-lb. cans, 10c; same in 50-gal. barrels, 8c. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Extra fine Michigan white clover and basswood-honey. Almost water white. Indeed, I doubt if the color, body, and flavor can be beat. Put up in 60-lb. cans, two to the case, at 15c per pound, or in 5-lb. pails, 50 to the barrel, at 17c per pound. Sample 15c. O. H. Schmidt, R. D. No. 5, Bay City, Mich.

RASPBERRY HONEY—Blended with a slight amount of willow-herb honey, two of the best honeys of northern Michigan. It was all thoroly ripened by the bees. It is good thick body, and fine flavor, none better for table use. It is put up for sale in 60-lb. tin cans. Price for two cans in a case, \$18.00; for one can in a case, \$9.50. Sample by mail, 20c, which may be applied on purchase of honey. Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE—A carload of the very finest quality extracted honey. This crop of honey was produced above excluders, in white combs that have never been used for brood; then the entire crop was left upon the hives until some time after the close of the honey flow, so is very thoroly cured by the bees. It is being put into new 60-lb. net tin cans; in fact, not a single thing has been neglected to make this crop of honey the finest possible to produce. It was gathered from white clover principally, with a very little basswood mixed in it, perhaps 5%. Of course, this fine honey is worth more than ordinary honey and we have to ask just a little above market price for it, so those not having a market that will pay a little more for an extra quality honey, had better not write about this year's crop of honey. E. D. Townsend & Sons, Northstar, Michigan.

HONEY AND WAX WANTED.

WANTED—Bulk comb and section honey. J. E. Harris, Morristown, Tenn.

WANTED—Honey, section, bulk comb, and extracted. W. A. Hunter, Terre Haute, Ind.

HONEY WANTED—Give particulars in first letter. Elton Warner, "Beaverdam," Asheville, N. C.

BEESWAX WANTED—For manufacture into **SUPERIOR FOUNDATION**. (Weed Process.) Superior Honey Co., Ogden, Utah.

I AM in the market for white clover, basswood, or amber honey. Send sample and quote me your lowest prices delivered f. o. b. Preston. M. V. Facey, Preston, Minn.

WANTED—All kinds comb and extracted honey and beeswax. Car lots or less—and full colonies of bees. W. C. Morris, 170 Rossiter Ave., Yonkers, N. Y.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, O.

WANTED—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

WE BUY honey and beeswax. Give us your best price delivered in New York. On comb honey, state quantity, quality, size, and weight of sections and number of sections to a case. Extracted honey, quantity, quality, how packed, and send samples. Chas. Israel Bros. Co., 486-490 Canal St., New York City.

FOR SALE.

ROOT'S GOODS AT ROOT'S PRICES. A. W. Yates, Hartford, Conn.

HONEY LABELS—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

FOR SALE—1500 sections, 500 M fences, 500 section-holders, springs, all 4x5x1 $\frac{1}{2}$. Thos. Wiley, Brewster, Minn.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed, at 60c per case f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., 2163 Central Ave., Cincinnati, Ohio.

PORTER BEE-ESCAPES save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

FOR SALE—“**SUPERIOR**” FOUNDATION, “quality unexcelled.” Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

FOR SALE—28 unbound zinc queen-excluders or honey-boards, 8-frame size. New, never used. 30c each. J. B. Sanderson, Fredericksburg, Ohio.

ROOT'S BEE SUPPLIES—For the Central Southwest beekeepers. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

SHIPPING CASES—1000 12-lb. three-row shipping cases, 2-inch glass for 4 $\frac{1}{4}$ x4 $\frac{1}{4}$ x1 $\frac{1}{2}$ -inch plain sections. These cases are complete, KD, packed in crates of 50. Price per crate, \$12.50. The A. I. Root Co., Medina, Ohio.

BOOKS recommended by A. I. Root: Tile Drainage, 25c; A B C of Potato Culture, cloth, 75c, paper, 50c; Merrybanks and His Neighbors, 15c; Winter Care of Horses and Cattle, 25c; Tomato Culture, 25c. The A. I. Root Co., Medina, Ohio.

WANTS AND EXCHANGES.

ROYAL typewriter, \$65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—Four-frame reversible power extactor. State price. Address B. R. Russell, Gardenville, Nev.

WANTED BEES, 100 to 150 colonies with or without outfit. Glen Holtermann, Waterford, R. D. No. 4, Ont., Can.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED—From 300 to 1500 colonies in good location in north or west to run on shares. References as to ability and honesty. The Stover Apries, Mayhew, Miss.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings, or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED TO BUY—Complete metal roller outfit for making comb foundation for personal use in apairy 500 colonies strong. State brand, condition, and lowest price. David C. Chapa, Apartado 10198, Mexico City, D. F.

WANTED—10-frame standard hives and equipment, empty combs (wired) and bees (nearby). To interest must be warranted disease-free, good condition and priced right. L. W. Smith, Madison, N. J. (or 56 William St., New York City).

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings, or slumgum. Send for our terms and our 1921 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Son, Hamilton, Illinois.

REAL ESTATE

FOR SALE—30 acres of land near Arcadia, Fla., bungalow house with two large porches, 40 colonies of bees, more or less, 250 colonies of bees in six apiaries along the Caloosahatchee River. Fine locations for honey, to ship bees or rear queens. No disease. Ward Lamkin, Arcadia, Fla.

SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedsman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM clover seed for sale. Get my prices. J. Tom White, Dublin, Ga.

PURE Hubam or white annual sweet clover seed. Oz., 25¢; lb., \$2.00. L. B. Harber, Rt. 1, Mt. Olive, Ky.

HUBAM or annual sweet clover seed (Hughes variety), at reduced prices. Evan Jones, Williams-town, N. J.

FOR SALE—Hubam clover, genuine Hughes strain (scarified). Jas. H. Kitchen, Springfield, R. D. No. 5, Ohio.

HUBAM, or white annual sweet clover. Grow it for your bees, and get a seed crop, while the seed is scarce. Booking orders for fall delivery. E. G. Lewis Co., Media, Ills.

HUBAM—The annual white sweet clover, produced under garden cultivation. Guaranteed genuine Hubam seed, cleaned, hulled, and scarified. \$2.00 per pound, prepaid. Blair Bros., R. D. No. 4, Ames, Iowa.

FOR SALE—A limited quantity of my crop of Giant Annual white sweet clover seed of the Hughes variety. This seed was all produced under cultivation. References and prices furnished upon application. All seed genuine, certified, and scarified with an Ames scarifier. Get your supply before I am all sold out. Edw. A. Winkler, R. F. D. No. 1, Joliet, Ill.

BEES AND QUEENS.

WATCH for my advertisement in January '22 issue. Allen Latham, Norwichtown, Conn.

FOR SALE—Italian queens, nuclei, and packages. B. F. Kindig, E. Lansing, Mich.

HARDY Italian queens, \$1.00 each. W. G. Lauver, Middletown, Pa.

SEE our large advertisement on page 786 for prices. Buckeye Bee Co., Justus, Ohio.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

TRY ACHORD'S BEES AND QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

IT WILL pay you to write for my 1922 circular and price list before placing order for those bees. R. V. Stearns, Brady, Texas.

1922 PACKAGE bees and queens, untested and day-old, in Thompson safety cages. Send for circular. James McKee, Riverside, Calif.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

FOR SALE—at pre-war prices, very best Italian queens and bees. Give us a trial. 700 colonies to fill your orders with. Rosedale Apiaries, J. B. Marshall and H. P. LeBlanc, Prop., Big Bend, La.

QUEENS, package bees, and nuclei. Booking orders now for 1922. Shipping begins March 15. Our early queens ready for northern queenless colonies at unpacking time. One untested, \$1.50; one select untested, \$1.70. Circular free of our pedigree strain on request. Dr. White Bee Company, Sandia, Texas.

FOR SALE—13 good painted hives of bees, with supers. For quick sale, \$5.00. A. McClinton, Trenton, Ga.

PHELPS GOLDEN QUEENS will please you. Mated, \$2.00; 6, \$10.00; or \$18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—1½-story hives with bees, \$4.00 each, 1½-story empty, \$2.25 each. All perfect condition. No disease. G. C. Sykes, West, Miss.

BEEs AND QUEENS from my Caroline apiaries—progeny of my famous Porto Rican pedigreed breeding stock. Elton Warner, Asheville, N. C.

QUEENS OF QUALITY for 1922. Three-banded Italians only. After April 15, untested, \$1.25; tested, \$2.00. Satisfaction guaranteed. P. M. Williams, Ft. Deposit, Ala.

FOR SALE—500 colonies in 4 yards, with power extractor, easy terms, near English colony. Very healthful, wonderful flows, local market. M. C. Engle, Herradura, Cuba.

WE are now booking orders for spring delivery of our queens and package bees. Write us your wants and ask for prices. Graydon Bros., Greenville, R. D. No. 4, Alabama.

BEEs BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apriaries, Calallen, Texas, E. B. Ault, Prop.

THREE-BAND packages bees, queens, and nuclei, April and May delivery. Special orders solicited. Write for prices and terms. Safe arrival and satisfaction guaranteed. Tupelo Honey Co., Columbia, Ala.

AM now booking orders for three-frame nuclei and queens of Dr. Miller's strain for 1922 delivery. I wish to thank my many satisfied customers for their patronage. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, \$1.00 each; \$10.00 per dozen; \$75 per 100. Pure mating, safe arrival, and satisfaction guaranteed.

FOR SALE—Three-banded Italian bees and queens. 2-lb. package with queen, \$4.75; without queen, \$3.75. Queens, \$1.00 each, \$11.00 per dozen; 25 per cent cash books order; safe arrival and satisfaction guaranteed in U. S. and Canada. We ship nothing but the best. W. C. Smith & Co., Calhoun, Ala.

EARLY SPRING delivery, 1922. Three-banded stock only. One Hoffman frame emerging brood, one good untested queen, one pound bees, April delivery, \$5.25 each package. Same as above, May delivery, \$4.75. 5 per cent discount on 25 packages or more; 10 per cent deposit to book your order. L. C. Mayeux, Hamburg, La.

CALIFORNIA ITALIAN QUEENS, the old reliable three-banded stock that delivers the goods. Every queen actually LAYING before being caged, and fully guaranteed. I also guarantee safe arrival. SPECIAL FALL PRICES, select untested, 1, \$1.25; 6, \$7.00; 12, \$13.00; 25 to 99, \$1.00 each; 100 and over, 90¢ each. Package bees for next spring delivery. Circular free. California Apriaries, J. E. Wing, Prop., 155 Schiele Ave., San Jose, Calif.

BEEs AND QUEENS—Vigorous Italian queens, famous leather-colored, three-banded stock, and also bees in packages. Two-pound package, with queen, 6.00; three-pound package, with queen, \$7.25; terms, deposit of 25% with order, balance just prior to shipment. These prices f. o. b. St. Rose, La. My bees are healthy. Unsolicited testimonials vouch for satisfaction given. Shipments begin about May 1, depending upon weather and season conditions. Safe arrival, or replacement or money refunded. C. M. Elfer, St. Rose, La.

"SELECTED QUEENS of Quality for 1922." Book your orders now for our golden and three-banded Italians. Rared by experienced breeder; bred for combined qualities; large, vigorous, well marked, priced right. Untested, \$1.20 each, 6, \$6.50; 12, \$12.00. 25% books your order. You want good queens. We want your business. G. H. Merrill, Greenville, R. D. No. 5, S. C.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL, and GENTLE. Virgins, \$1.00; mated, \$2.00; 6 for \$10.00, or \$18.00 per doz.; tested, \$5.00. Breeders, \$10.00 to \$20. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—Package bees for spring delivery, three-band strain, bred for business, 20% cash books your order. Safe arrival and satisfaction guaranteed. A two-pound package of bees and select untested queen for \$5.00; 25 or more for \$4.75 each. Write for prices on larger lots. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1-frame brood and bees. 1 untested queen, at \$6.00; 2-frame with untested queen, \$4.50, about April 15. Young tested queen, 50¢ extra, or \$1.50 each. I think I was the second to ship packages of bees from this State and know how to serve customers. F. M. Morgan, Hamburg, La.

FOR SPRING DELIVERY, 1922—One vigorous Italian queen, one frame emerging brood, one pound bees. Price, complete, f. o. b. Bordelonville, \$5.00. Additional frames of brood, each \$1.00; additional pounds of bees, each \$1.00. Queen introduced and laying en route to you. Safe delivery and satisfaction guaranteed. No disease. Reference given. Orders booked one-fifth down. May delivery. Send for addresses of satisfied customers. Jes Dalton, Bordelonville, La.

FOR MAY AND JUNE DELIVERY—Place your order for our high-grade three-banded Italian bees and queens now. Take advantage of early order discounts by ordering now. We guarantee to please you. Prompt service and quality stock is our motto. We want your orders for bees on Root standard Hoffman frames, emerging bees. Pound packages and nuclei, with or without queens. Write for our prices and valuable information. Oscar Mayeux, Hamburg, La.

PACKAGE BEES, delivery April 15 to May 15, 1922. Three-banded Italians, no disease, safe arrival and satisfaction guaranteed. Inspection certificate with each package. 2-lb. pkg. bees with select untested queen, \$6.50; 3-lb. pkg. bees with select untested queen, \$8.50. 10% discount on orders of 25 or more packages; 25% books your order. References A. I. Root Co., New Orleans, La. R. S. Knight, 4927 Conti St., New Orleans, La.

NEW 1922 PRICES—On account of the present price of honey and recent reduction in the price of supplies we are now booking orders for our three-band leather-colored Italians at the following low prices: 2-lb. packages of bees, no queen, \$4.00; untested queen, \$1.25; 12, \$13.50. Select untested, \$1.50; 12, \$15.00; tested, \$2.25; 12, \$20.00. No disease. Safe arrival in U. S. and Canada and satisfaction guaranteed. Write for circular and prices on quantities. J. M. Cutts, R. D. No. 1, Montgomery, Ala.

FOR SALE—1922 bees. Mr. Beeman, send your order early. First arrived, first served. Make shipment April 25 to June 5. Several years' experience. 2-lb. package three-banded Italian bees, 1 untested queen, \$5.50. 1st. We use pure sugar syrup; better than honey or candy to ship on; it contains water as well as feed. 2nd. Feeders are made more substantial, $\frac{1}{2}$ larger and have screw cap that will not jar out. One-third down and balance just before shipment. Guarantee safe arrival all over U. S. and Canada. A. J. Lemoine, Moreauville, La.

WE are now equipped to handle your early spring orders for package bees, and Italian queens, especially bred for the production of honey. Prices will be in accord with the reduction in material and labor. Safe arrival guaranteed. Write for prices and terms. Sarasota Bee Co., Sarasota, Fla.

BOOKING orders for spring delivery. Queens, package bees, and nuclei. The reliable A. I. Root strain. Golden and leather-colored Italians. Virgins, 60¢; untested, \$1.50; select untested, \$2.00; tested, \$2.50; select tested, \$3.00. Circular free. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Pure Italian bees for 1922 spring delivery. Pound packages shipped with stores on Hoffman standard frames. Certificate of inspection with each shipment. Safe arrival and satisfaction guaranteed. 2 lbs. bees, \$4.75; 3 lbs. bees, \$6.25; 1-fr. nucleus, \$3.75; 2-fr. nucleus, \$5.75; add price of queen desired with each package. Untested queens, \$1.00 each after May 1. Tested queens reared during fall 1921 especially for early shipment at \$2.00 each, beginning April 15. 25% books your order. Discount on large orders. J. L. St. Romain, White Clover Farm & Apiary, Hamburg, La.

NOTICE, Mr. Beekeeper:—We are prepared to handle your orders for spring delivery, 1922, for pound packages, nuclei and full colonies of high-grade three-banded leather-colored and golden Italian bees and queens. They are great honey-gatherers, hardy, gentle and resistant to bee diseases, bred from the best strains of queens obtainable. Untested, tested, select tested, just as you wish. I also have an outyard of hybrid bees to sell with Italian queens in pound packages. Very reasonable. Safe delivery guaranteed, prompt service, satisfaction. Write for prices and recommendations from satisfied customers. Pre-war prices. No disease. M. Voinche, Bunkie, La.

MISCELLANEOUS.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as \$10,000 per acre for each crop. It takes several years to mature but will average \$1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10¢; \$1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED

WANTED—Practical beeman. Shares. Address with full particulars. F. McCann, La Gloria, Cuba.

WANTED—One experienced queen-breeder for season of 1922. Give age, experience, and reference in first letter, also wages desired. N. Forehand, Ramer, Ala.

SITUATIONS WANTED

YOUNG man 19 wants to learn beekeeping. Three years' experience in small apiary. Habits good, not afraid of work, ambitious. Wages not considered. W. A. Scheibe, 51 6th Ave., New York City.

The BEST LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

INDIANOLA APIARY

is now booking orders for 1922 for Italian bees and queens. Write for price list and circular. No disease. Bees inspected by State inspector.

J. W. SHERMAN
Valdosta, Ga.

Bees & Queens for 1922

10 Per Cent Discount for Orders Received Before 1922

One 1-frame nucleus with untested queen, \$4.00; one 2-frame nucleus with untested queen, \$5.00; untested queens, \$1.25 each; 12, \$1.10 each; tested queens, \$1.60 each; 12 or more, \$1.35 each; select tested queens, \$2.00 each. Breeders, \$5.00 at all times.

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World's Best Roofing
at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofs, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest ever made.

Edwards "Reo" Metal Shingles
cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot, fire, rust, lightning proof.

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Get our wonderfully low priced "Reo" samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183

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Lowest prices on Ready-Made Fire-Proof Steel Garages Set up any place. Send postal for Garage Book, showing styles.
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LARGE, HARDY, PROLIFIC QUEENS

Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness, and color. After June 1st: Untested queens, \$1.50 each; 6 for \$8.00; 12 or more, \$1.40 each; 25 or more, \$1.25 each. Tested queens, \$3.00 each; six for \$16.00.

Buckeye Bee Co., Justus, Ohio.

BARNES' Hand and Foot Power Machinery

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

MACHINES ON TRIAL

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO
545 Ruby Street
ROCKFORD, ILLINOIS



NORTHERN-GROWN HUBAM SEED

BEEKEEPERS:—Now is the time for all beekeepers to secure the new Hubam annual sweet clover seed for planting on waste land next spring, and to interest and educate their neighbors in planting it. It will pay any beekeeper to give away seed and to instruct neighbors how to grow it, in order to secure bee pasture from one of the greatest honey-yielders known.

DEALERS:—This is just the time to get prices and to interest prospects for spring. Get the county agents back of this valuable new clover, and arrange with us to get your seed at once.

Hubam seed will be sold by all branch offices of the A. I. Root Company, and by many of our authorized distributors.

THE A. I. ROOT COMPANY
MEDINA, OHIO

**BANKING
BY MAIL
AT 4%**

THE SAVINGS DEPOSIT BANK CO.
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It matters not in the least where you live, you can avail yourself of the safety and convenience afforded by this bank as though you lived in Medina. Write for our "Banking by Mail" booklet.

**MASON BEE SUPPLY COMPANY
MECHANIC FALLS, MAINE**

From 1897 to 1921 the Northeastern Branch of
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PROMPT AND EFFICIENT SERVICE
BECAUSE—Only Root's Goods are sold.

It is a business with us—not a side line.

Eight mails daily—Two lines of railway.

If you have not received 1921 catalog send name
at once.

CANDY FOR WINTER FEED

In winter bees sometimes starve with plenty of
honey in the hive. Use candy and avoid this un-
necessary loss. Put up in large paper plates
weighing two pounds each. Write for price,
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Patented

RHODES MFG. CO.,
328 S. DIVISION AVE., GRAND RAPIDS, MICH.

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

FOR YOUR 1921 CROP

Comb honey shipping cases, honey cans, friction-top pails. Price on application.

Early order cash discount on sections, hives, supers, frames, comb foundation, and other goods.

Buy now and get supplies ready for 1922. Make out your list, and send for our prices.

AUGUST LOTZ COMPANY, BOYD, WIS.

Write for our Red Catalog
with reduced price sheet.

Reductions are from 10% to 35%
off our Spring and Summer prices.

LET US MAKE YOUR BEESWAX INTO FOUNDATION NOW,
SO YOU WILL HAVE IT READY EARLY IN THE SPRING.

We also render wax from old combs and slum gum.

Send Us a List of Your Requirements in BEE SUPPLIES

We sell the best possible goods at the lowest possible prices.

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FALCONER (Near Jamestown), N. Y., U. S. A.

"Where the best beehives come from."



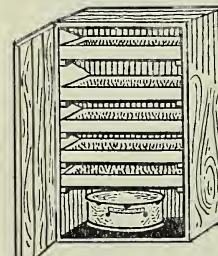
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"Best" Hand Lantern
A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. THE BEST LIGHT CO.
306 E. 5th St. Canton, O.



Oat Sprouter
\$2 49

You can make a better sprouter than you can buy. This sprouter was made in one evening by a 14 year old boy with a saw and hammer. The cost, with heater, was \$2.49. Thousands in use. All say it is the best and handiest made.

Make Layers Out of Loafers.

To make hens lay their best, in winter, growing green food, rich in vitamins, must be fed. Sprouted oats are best. The Putnam Home Made Sprouter yields the best and sweetest sprouts and with the least work. I will send, free, plans for this sprouter with description of Little Putnam Stove to heat it. Also instructions for use of stove to keep fowl's drinking water unfrozen. Stove holds three pints of oil. Burns a month without trimming or filling. Patented burner. Nothing like it. Ask your dealer, or send me his name and \$2.00 and get one by return mail, postpaid. Try it. If not satisfied, return in 10 days and I'll refund \$2.00 and postage. I run all risks.

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Full stocks, best goods, service and treatment. Get catalog.

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The Kind You Want and the Kind
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Books and Bulletins

"*Every Step in Beekeeping*," by Benjamin Wallace Douglass, published by The Bobbs-Merrill Co., Indianapolis, a delightfully written book of 178 pages, has just been issued. The book is written especially for beginners in beekeeping, the author drawing largely from his own experience as a beginner, enumerating the many perplexing problems which he encountered and telling how they were solved. The book is exceedingly entertaining, aside from the lessons in beekeeping, tempting the reader on from chapter to chapter like a novel. It is well illustrated with a number of half-tone plates, making it an attractive volume.

The Interim Report of the Dominion Apiarist, by the late F. W. L. Sladen, is a valuable bulletin published by the Department of Agriculture of the Dominion of Canada. This bulletin gives a summary of results of experiments conducted by the Bee Division of the Dominion Department of Agriculture, on the prevention of swarming, size of hives, wintering two queens in a hive, outdoor wintering, and cellar wintering.

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Take advantage of early-order discounts by ordering NOW. We guarantee to please you. "Prompt service and the very best" is our motto. *We want your beeswax and old comb.* Highest cash and trade prices offered. Texas beekeepers should write A. M. HUNT, Goldthwaite, Texas.

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Write for FREE catalog. It is your interest.

LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 20c postpaid. Made by

G. B. Lewis Company, Watertown, Wis., U.S.A.
Sold only by Lewis "Beeware" Distributors.

We Are the HUB for HUBAM

Guaranteed, certified Annual Sweet Clover.

All new crop, grown on our own farms and all from the first fifty seeds from that original plant at Ames.

We are shipping to all parts of the world now. HUBAM is being planted somewhere every day for bee pasture, hay, pasture, or for green manure to plow in.

The seed is hulled and scarified, with a purity of 99.8% and grows 97%. Price now is \$2.00 per pound.

Our seed is pure. You buy from an old established firm with a reputation to maintain when you buy from

The Henry Field Seed Co.
SHENANDOAH, IOWA.



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More than that, the BARKER breaks the hardest crust into a level, porous, moisture-retaining mulch—all in the same operation.

A ten-year-old boy can run it—do more and better work than ten men with hoes. Saves time and labor, the two big expense items.

BARKER WEEDER, MULCHER AND CULTIVATOR

Eight reel blades revolve against a stationary underground knife—like a lawn mower. **BEST WEED KILLER EVER USED.** Works right up to plants. Cuts runners. Aerates the soil. Has leaf guards, and shovels, for deeper cultivation—*3 garden tools in 1.*

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Tells how gardeners and fruit-growers everywhere are reducing their work; increasing their yields.—How to bring growing plants through a dry season.—How to conserve the moisture and force a larger, more rapid growth. Send TODAY for this free, illustrated book and special Factory-to-User offer.

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Dept. 23.

David City, Neb.

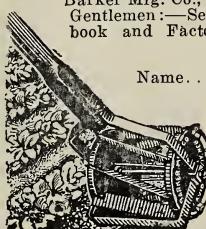
Barker Mfg. Co., Dept. 23, David City, Neb.
Gentlemen:—Send me postpaid your free book and Factory-to-User offer.

Name.....

Town.....

State.....

R. F. D. or Box.....

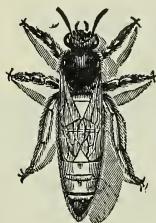


Bees & Queens for 1922

Is there a great difference among bees and queens? Mr. Beekeeper, with bees and queens a small difference counts high. A small per cent better laying queen will greatly increase the field force; this will insure a larger honey yield per colony. A small per cent better worker will aid wonderfully. A small per cent more gentleness will greatly reduce the stings; this increases the efficiency and speed of handling, not counting the pleasure. A small per cent of better marking adds wonderfully to the beauty of the colony. By developing the small qualities of my bees and queens I have attained marked success in producing better queens and bees. My aim is to produce bees and queens that will meet the high standard required by beekeepers. Let me book your order for 1922. One-fourth the full amount will insure your getting bees and queens when you want them most next spring. Perfect satisfaction, safe delivery, and pure mating guaranteed. Pure Italian bees and Three-Band Italian queens of the better kind.

Untested—1, \$1.50; 6, \$7.50; 12, \$13.50. Selected Untested—1, \$1.75; 6, \$9.00; 12, \$16.50. Tested—1, \$2.50; 6, \$13.00; 12, \$24.50. Selected Tested—1, \$4.00; 6, \$22.00; 12, \$41.50. One pound bees, \$2.75; two pounds bees, \$4.75; three pounds bees, \$6.75. If queen is wanted with bees add price. Write for prices on large lots.

N. FOREHAND, RAMER, ALABAMA



Try Achord's Package Bees and Queens

THREE-BANDED ITALIANS ONLY.

We have the stock, equipment, and experience, and can give you prompt, satisfactory service. We have more than 1000 big, healthy hustling colonies of pure Italian bees to draw from. Write for illustrated price list.



W. D. ACHORD, FITZPATRICK, ALABAMA

SPECIAL OFFER ITALIAN BEES AND QUEENS

Having decided to make a specialty of three-frame nuclei with queens we are offering these at prices that will pay you to inquire for. We have 2000 colonies of **ITALIAN BEES** headed with young queens **ABSOLUTELY FREE OF DISEASE** to draw from. We are prepared to give your order prompt attention whether it is for one or a thousand nuclei. If customer or community wants as many as a carload, we are prepared to ship that way.

Will start shipping April 15th and can ship 200 packages a day. We will let nothing within our control come between us and your order for bees and queens. We **GUARANTEE SAFE ARRIVAL AND SATISFACTION**, and to ship your order within five days of the day set or wire you when we can ship giving you the privilege to cancel your order.

Let us quote you; we can save you money.

**THE STOVER APIARIES
MAYHEW, MISSISSIPPI**

Package Bees and Reliable Queens

GOLDEN AND THREE-BANDED ITALIANS

We are now in a position to accept orders for queens and bees for 1922 shipping, in large quantities.

We have the stock and the equipment and experience necessary to handle your orders, whether large or small, and promptly and in a satisfactory manner. All packages are headed with large vigorous young queens of our own production. You will be pleased with the stock and service we can give you. Write for our price list.

E. A. SIMMONS
GREENVILLE, ALA.

1922 PRICES

PACKAGE BEES with select three-banded Italian queens delivered to your address via parcel post, postage paid by me. Prices:

1-pound package with young Italian queen	\$4.50
2-pound package with young Italian queen	6.00
3-pound package with young Italian queen	7.50
25 cents per package less for twelve or more packages.	

The high quality of my queens, combined with prompt service and reliability, justifies the above prices. Let me book your order now with 10 per cent cash, balance just before shipping. Will send bees on the day you name. Pure mating of queens, safe arrival, and satisfaction guaranteed.

JASPER KNIGHT
HAYNEVILLE, ALA.

5 REASONS WHY ---

You will want to send us the coupon at once

Money Saved Is Money Made

The A. I. Root Co. of Iowa,
Council Bluffs, Iowa.

Gentlemen:—Kindly name your fall prices of the following:

1. Eight-frame hives, metal covers, complete, sets 5 KD.
2. Eight-frame bodies, with frames, complete, sets 5 KD.
3. Shipping cases, lots of.....
4. Cans, jars, pails, and second-hand 5-gal. cans.
5. Honey tanks.

Name

Address

City

State

THE A. I. ROOT CO. OF IOWA
COUNCIL BLUFFS, IOWA

New Prices on Friction-Top Pails

	25	50	100	200	500	1000
2½-lb. Cans	\$1.50	\$2.25	\$4.10	\$8.00	\$19.00	\$37.50
5 -lb. Pails	2.10	3.80	7.25	14.25	33.50	65.50
10 -lb. Pails	2.75	5.15	9.85	19.50	47.00	93.00

5-lb. Pails in reshipping cases of 12.....\$1.30; ten cases.....\$12.00
 10-lb. Pails in reshipping cases of 6..... 1.00; ten cases..... .90
 1-lb. Round jars, 24 to case, per case... 1.70; ten cases..... 16.50
 ½-lb. Round jars, 24 to case, per case... 1.50; ten cases..... 14.00
 6½-oz. Tumblers, 48 to case, per case..... 1.65; ten cases..... 16.00

These prices are f. o. b. cars Lansing and not from some distant shipping point.

Paste for Tin and Glass Packages

We have a very excellent paste for fastening labels on your glassware or pails. THEY STICK. We are quoting prices below. Postage extra.

"A" grade paste, per pint.....	.30
"A" grade paste, per quart.....	.55
"A" grade paste, per gallon.....	2.00

4% Cash Discount for December Orders

This discount applies to goods wanted for next season, and does not apply to orders for containers listed above.

BUY NOW the goods you need for next spring. Take advantage of the discount, and get your goods ready for use during the winter months. Quantity discount allowed on large orders. We can quote you the 1922 prices at once. Send us a list of the goods you need.

We Sell Root Quality Goods Only

BEESWAX WANTED—We want beeswax. Top market price paid, cash or trade for goods.

M. H. HUNT & SON
 510 North Cedar Street, Lansing, Michigan

THREE-BANDED

LEATHER-COLORED

20,000 Italian Queens for 1922

4,000 Packages and Nuclei

SOUTHLAND QUEENS**THEY EXCEL**

Bred from Root Home-Bred Selected Breeders. Backed by over 50 years' experience in breeding the Best, Most PROLIFIC queens of today.

EXTREMELY PROLIFIC BRED FOR SERVICE**A FEW VOLUNTARY LETTERS.**

New Liskeard, Ont., Canada.

Your queens are the largest, finest, most prolific I have ever handled. Have purchased queens from the largest breeders in the country and yours surpass them all. They are hardy, resistant. They eat up E. F. B. Am telling all my neighbors about your queens.

Slater, Wyoming, Sept. 22, 1921.

Queens arrived O. K. Received Sept. 9th. A day and a half from the time the queen was turned loose there were FOUR frames filled with eggs. Thanking you for your good queen, I remain,

Vancouver, B. C., Sept. 1, 1921.

We received the queens several days ago. I might say that while I have imported several hundred queens this year these are the best in the Leather-colored Italians that have been imported yet. The leather-colored bees are winning favor over the goldens in this province.

20,000 ————— QUEENS ————— 20,000

Untested, \$1.50; 12 or more, \$1.25; 25 or more, \$1.15; 50 or more, \$1; 100 or more, 90c.
Tested, \$2.50; 12 or more, \$2.25; 25 or more, \$2.15; 50 or more \$2; 100 or more, \$1.90.

POUND PACKAGES—SHIPPED ON COMB OF FOUNDATION

(F. O. B. Shipping Point by Express.)

1-lb. package, no queen, \$3.00; 25 or more, \$2.25; 50 or more, \$2.15
2-lb. package, no queen, \$5.00; 25 or more, \$3.75; 50 or more, \$3.50
3-lb. package, no queen, \$7.00; 25 or more, \$5.25; 50 or more, \$5.00

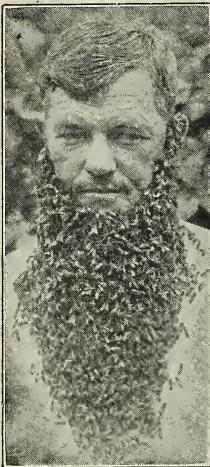
NUCLEI

Good strong combs—filled with brood. Same prices respectively as pound packages.

**WE GUARANTEE SAFE ARRIVAL. MISMATED QUEENS REPLACED.
BOOK YOUR ORDER NOW. OUR SUPPLY IS LIMITED.**

THE SOUTHLAND APIARIES

BOX 585, HATTIESBURG, MISS.



WHILE I have again reared a crop of whiskers, *I have shaved my prices* on queens for the season of 1922 to conform to the general reduction in prices of other commodities, but the high quality will be maintained; in fact, I make it a rule to produce better queens every year by employing improved methods and always striving to improve the stock. I have proved to my own satisfaction that the stronger the colony that builds the cells, the larger, better and more uniform will be the queens thus reared. While it is more expensive to produce queens in this manner, as many colonies must be weakened to furnish brood to the cell builders, yet it pays us as it creates a steady demand for our queens at prices that are fair to all concerned. But it pays the purchaser still more, as he gets splendid queens that bring big returns in honey. The season just closed was very satisfactory in that we were able to fill most orders at the time promised, but still we had some more than we were able to fill. We are increasing our nuclei and will make an earnest effort to give prompt service the coming year; but I solicit the co-operation of our customers in this matter, and, in order to facilitate prompt shipment, we request that you anticipate your wants as far in advance as possible and place your order early. No cash is required in booking an order, but money may be sent any time before the day of shipment. However, as some will find it convenient to send cash with order, we allow a *discount of 6%* on all cash orders received during the month of December.

1922 PRICES

Before Aug. 1st.

1 to 4 inclusive.....	\$2.50 each
5 to 9 inclusive.....	2.45 each
10 or more	2.40 each

After Aug. 1st.

1 to 4 inclusive.....	\$2.00 each
5 to 9 inclusive.....	1.95 each
10 or more	1.90 each
Breeders, for the season....	\$10.00 each

A card will bring
our catalog.

JAY SMITH, ROUTE THREE, VINCENNES, IND.

A Superior
Quality at
Less Cost

SUPPLIES

A Superior
Quality at
Less Cost

THE SPECIAL PRICES LISTED BELOW ARE GOOD UNTIL DEC. 31st.

These supplies are made by the Diamond Match Co., and are of a superior quality. Hives, Supers, etc., listed below, are in the flat, and are complete with Hoffman frames, metal rabbets, and all inside fixtures.

One-Story Dovetailed Hives

Five 8-frame	\$10.50	Five 8-frame	\$5.00
Five 10-frame	11.00	Five 10-frame	5.50

Shallow Extracting Supers

Five 8-frame	\$4.00	Five 8-frame	\$3.50
Five 10-frame	4.50	Five 10-frame	4.00

Standard Hoffman Frames

100	\$5.50
500	25.00

Aluminum Honeycombs as now made by Duffy-Diehl Co., are meeting with success. We carry these in stock to supply Eastern beekeepers.

HONEY! HONEY! HONEY!

Beekeepers who are supplying Honey to a regular family trade, or who are located along the highways, and are supplying motorists, know that their customers want a honey of a uniform color and flavor. And unless the honey is at all times uniform in color and flavor, customers sometimes become dissatisfied. Our special blend of Fancy Honeys (liquid) is always uniform and is of a fine mild flavor, and will satisfy the most exacting trade.

Special Blend of Fancy Honey (Liquid)
 10-lb. Tins, 6 per case.....16c lb.
 5-lb. Tins, 12 per case.....17c lb.
 2½-lb. Tins, 24 per case.....18c lb.
 Pure Vermont Maple Sap Syrup,
 case of 12 5-lb. tins.....\$14.00

Various Grades, Crystallized, 60-lb. Tins
 Water White Orange.....14c lb.
 Water White Clover or White Sage
 Extra Light Amber Sage.....11c lb.
 N. Y. State Buckwheat.....10c lb.

GLASS AND TIN HONEY CONTAINERS

2½-lb. Cans, 2 dozen reshipping cases, \$1.45 case; crates of 100.....\$ 5.00
 5-lb. Pails (with handles), 1 doz. reshipping cases, \$1.35 per case; crates of 100
 10-lb. Pails (with handles), ½ doz. reshipping cases, \$1.10 case; crates of 50
 60-lb. Tins, 2 per case—NEW, \$1.30 case; USED
 .25

White Flint Glass, With Gold Lacquered Wax Lined Caps.
 8-ounce Honey Capacity, Cylinder Style.....\$1.50 per carton of 3 dozen
 16-ounce Honey Capacity, Table Jar Service.....\$1.40 per carton of 2 dozen
 Quart or 3-pound Honey Capacity, Mason Style.....\$1.00 per carton of 1 dozen

HOFFMAN & HAUCK, INC.
 WOODHAVEN, NEW YORK



Christmas 52 Times a Year

THE YOUTH'S COMPANION

The Companion breathes the Christmas spirit all through the year. It helps to make home a centre of attraction ; it increases knowledge, holds fast to the highest standards of thought and conduct and provides wholesome entertainment in overflowing measure.

Our Christmas Present Offer

Every New Subscriber sending \$2.50 with this coupon or the name of this publication will receive :

1 The 52 Weekly Issues of The Companion for 1922	All for \$2.50
2 All the remaining issues of 1921	
3 The Companion Home Calendar for 1922	

THE YOUTH'S COMPANION, BOSTON, MASSACHUSETTS

This is the First of a series of advertisements which will appear from month to month featuring "Root Quality" products which are the results of revolutionary developments in manufacturing supplies and equipment for beekeepers and honey-producers.

On this page next month will be given a brief sketch of the early history and development of the honey extractor from the first crude machine down to the latest modern product of engineering skill and mechanical design.

AIRCO

The Comb Foundation With a Perfect Cell Base.

After years of experimenting and at an expense of thousands of dollars, the new Airco process of manufacturing comb foundation was perfected. That this time and expense was justified is amply demonstrated by the numberless testimonials received from all parts of the world. Airco foundation has marked a new era in beekeeping.

The superiorities of Airco over the old-style foundation made upon cut mills are two-fold:

1. The new milling process makes possible a base with a natural comb angle; a base with no distortion; a foundation with no imperfect cells; and a foundation with reinforced and braced cell walls.
2. The new refining process insures denser and tougher wax, cleaner wax, more ductile wax, and wax that stays fresh much longer.

ASK THE BEES—They know what they want and why they want it.

Send for our free booklet, "Why Bees Prefer Aireo Comb Foundation."

**Order early and save delay. 4 per cent
early order cash discount for December.**

"There is a Root Dealer Near You."

THE A. I. ROOT COMPANY, MEDINA, OHIO

Fifty-two Years in the Bee Supply Industry.

New York, 23 Leonard St.
Philadelphia, 8-10 Vine St.
Chicago, 224 W. Huron St.
Indianapolis, 873 Mass. Ave.

Savannah, Ga., 126 W. Bay St.

St. Paul, Minn., 290 E. 6th St.
Norfolk, Va., 10 Commerce St.
New Orleans, La., 224 Poydras St.
Syracuse, N. Y., 1631 W. Genesee St.

(Watch this page in the January issue for the next installment.)

The American Bee Journal

C. P. DADANT—Editors—FRANK C. PELLETT
Assisted by contributors foremost in their fields.

SUBJECTS RECEIVING SPECIAL ATTENTION ARE:

There is no bee paper in the whole world to be compared for size and general excellence to the American Bee Journal.—Rev. A. A. Evans, London (England) Herald.

Factors controlling nectar secretion.
Articles on practical beekeeping.
Nectar sources of different states.
The cost of production.
Questions answered by C. P. Dadant.
Crop and market reports monthly.
General and association news.
Travel and observation notes.

You are publishing by far the best bee Journal I have ever seen.

—V. R. Thagard,
Greenville,
Alabama.

RECENTLY INCREASED IN SIZE FROM 32 TO 44 LARGE SIZE PAGES.

Subscription price, \$1.50 a year. Foreign postage, 25 cents.

Sample copy mailed gladly on request.

OUR BEE BOOKS

THE HONEYBEE, Langstroth and Dadant, 575 pp., 212 engravings, cloth bound. Price postpaid \$2.50. French edition \$2.50. Spanish edition \$2.50.

FIRST LESSONS IN BEEKEEPING, C. P. Dadant, 167 pages, 178 illustrations, cloth. Postpaid \$1.00.

1000 ANSWERS TO BEEKEEPING QUESTIONS, C. C. Miller, Cloth, 200 pages, illustrated. Price postpaid \$1.25.

PRACTICAL QUEEN REARING, Frank C. Pellett, 105 pages, 40 illustrations. Cloth. Postpaid \$1.00.

CUT-APIARIES, M. G. Dadant, 115 pages. Cloth, 50 illustrations. Price postpaid \$1.00.

AMERICAN HONEY PLANTS, Frank C. Pellett. 300 pages, 155 illustrations. Cloth. Postpaid \$2.50.

DADANT SYSTEM OF BEEKEEPING, C. P. Dadant. 115 pages, 58 illustrations. Cloth. Postpaid \$1.00.

BEEKEEPING IN THE SOUTH, Kenneth Hawkins. 125 pages. Cloth, 50 illustrations. Price postpaid \$1.25.

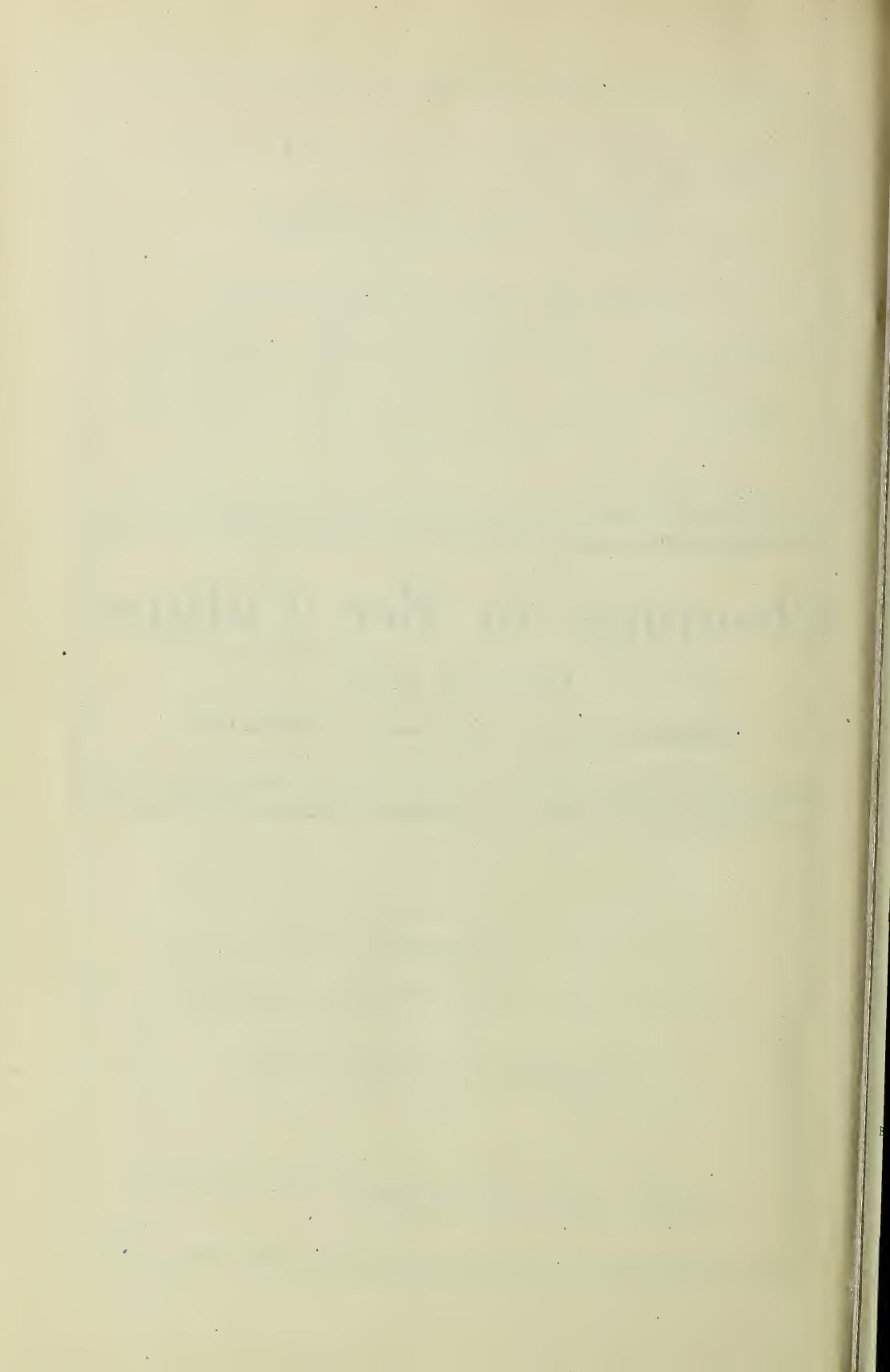
Add \$1.25 to the price of any book for both book and American Bee Journal one year.

American Bee Journal, Hamilton, Illinois

Gleanings in Bee Culture

Index for 1921

Published by The A. I. Root Company, Medina, Ohio



Index to Gleanings in Bee Culture

Volume XLIX

In using this index the reader should not fail to note that it is divided into five departments, namely, General, Editorial, A. I. Root's writings, Contributors, and Illustrations. The index of General includes everything except Editorials, Illustrations, and A. I. Root's writings.

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